



FRIDAY, MARCH 15, 1878.

Cleminson's Flexible Car Wheel-Base System.

The engravings herewith and the following description of Mr. James Cleminson's system of running gear for railroad cars is copied from a late number of *The Engineer*. In describing this invention that paper says:

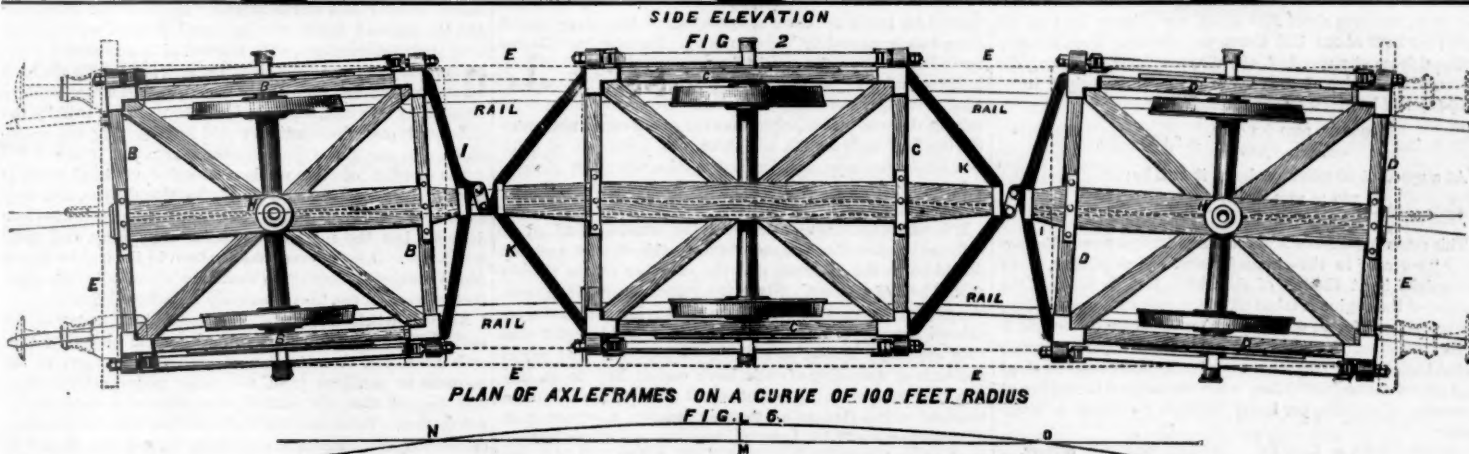
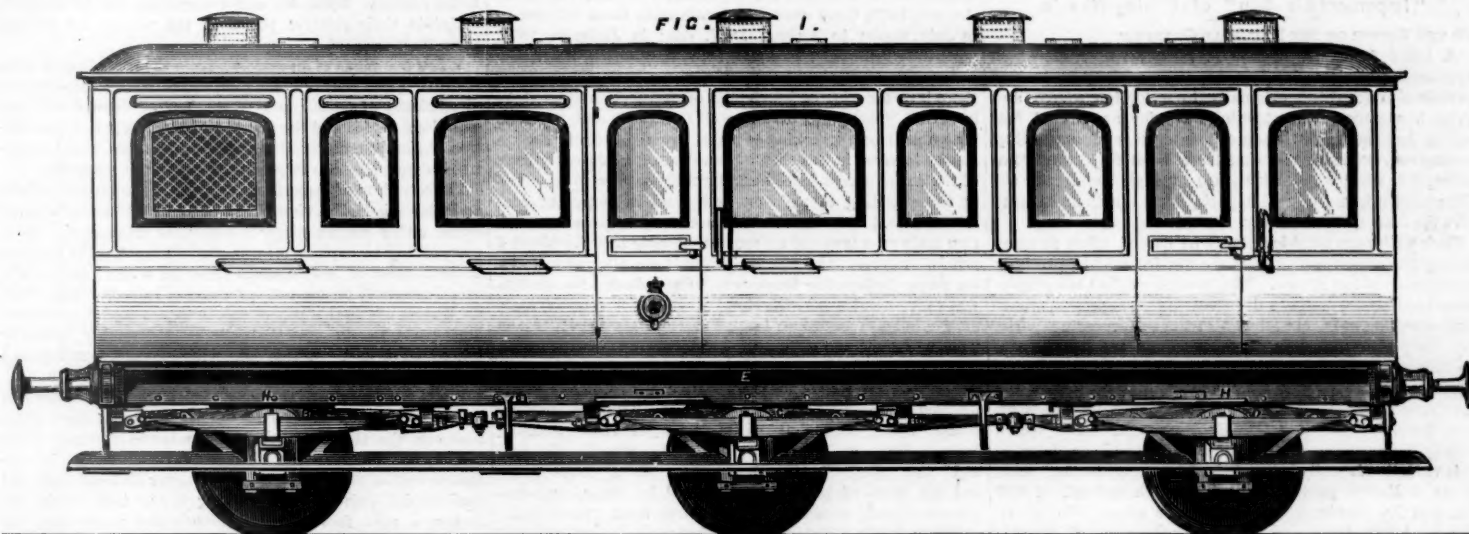
"Though the desirability of using some arrangement of the undercarriages of railway rolling stock, by which the axles would be free to depart from rigid parallelism when traversing curves, has been felt for many years, it is only recently that much has been done in this direction as regards passenger coaches in this country. Previously all the stock, and even now, on most of our lines, practically all, was and is fitted with wheels whose axes are rigidly parallel, a condition which could not have been allowed to exist so long, had it not been possible to obtain the requisite engine

trated in diagram, Fig. 4, from which the tendency of the wheels to mount the rails, and the increased power necessary on a curve, as compared with a straight line, to pull such a carriage along, may be estimated. By the use of the bogie the strongest objections to long carriages have been overcome, but others have been imported by which the object of using long carriages has been partly defeated. The bogie car being supported only at or near the ends, its motion is little better than an ordinary short carriage, while the distance between the supports involves the use of very strong and heavy framing, and the bogies of themselves are of such weight that the paying proportion of the load, instead of increasing with the increased length, has in most instances decreased. The parallel axes of the bogies have, moreover, the objections which are attached to short carriages with such axes, so that although it, as far as itself is concerned, permits the construction of long carriages, the grinding and waste of power on curves is as great as with ordinary short carriages, for the direction of pull of the long carriage on a curve causes a thrust on the inner rail at the foremost end and on the outer rail at the rear end.

"Our object here is to place before our readers a system of construction invented by Mr. James Cleminson, of Westminster, which overcomes these difficulties in a satisfactory manner, its chief recommendation being that while securing other advantages, it provides the means of passing round the sharpest curves with the axes always normal and

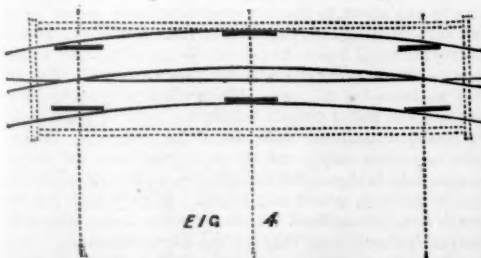
notoriously crooked, but it is on such lines that the new carriages show their great superiority in steadiness and smoothness in running.

"Besides being in use on the lines referred to, a number of pairs of short Metropolitan carriages are being converted into single long carriages on the new system by splicing, and a large quantity of stock is running on the Campanha Paulista Railway of South America. Several English companies are making up whole trains, and a somewhat remarkable example of the application of the system is its use on the North Wales Narrow-Gauge Railway. The gauge is 1 ft. 11 1/2 in., and an official trial of a whole new train was recently made at a speed of twenty miles per hour, which on a line which may be almost considered as a continuous set of curves of two chains radius, would be attended with the greatest danger with any other stock. The stock has hitherto been of the bogie class, the carriages being 25 ft. in length, carrying thirty passengers, and weighing 5 1/2 tons. The new carriages are 30 ft. long, carry forty-two passengers, and weigh 4 1/2 tons each. The latter have thus 33 per cent. more accommodation and weigh 20 per cent. less than the former. The bogie carriages rock very much in passing round the two chain curves, but this is not the case with the new carriages, which have a wheel base of 23 ft., or more than one-sixth the radius of the sharpest curve. The economy in weight in this instance is, it will be seen, very great, and is illustrative, for though on the stock of full size rail-



ROYAL SALOON CARRIAGE, SOUTHWESTERN RAILWAY, ENGLAND.

Cleminson's Flexible Wheel-Base System.



power and strength of the parts of the vehicles and permanent way which such a system of construction entails. On a straight line a vehicle with parallel axes may be considered to need very little guidance by the flanges or rails; the tendency of such a vehicle in motion is to pursue obstinately a straight course, and from it is only caused to depart by side pressure on flanges and rails. The intensity of that pressure may be imagined when the amount of skidding or any curve is remembered. For instance, a train passing round 90° of a curve of, say, ten chains radius, is actually skidded through not less than 60 ft. or 70 ft., the actual amount of skidding depending, to some extent, upon the length of the vehicles. The Americans first endeavored in a practical manner to remove this defect by the application of the bogie, but even that very useful invention only partly removes it, as each bogie is in itself a vehicle with parallel axes, but with a short wheel-base. It is only recently, however, that even the bogie has been much used in this country, though it has for several years been known that long carriages run much more steadily than those of the ordinary length, and that the proportion of dead weight, or non-paying load, may be made to decrease with increase of length. Carriages of increased length have been built, most of them running on six wheels with parallel axes, a certain amount of transverse play being allowed in the central axle. Even with this, however, the position of the wheels on a sharp curve is as illus-

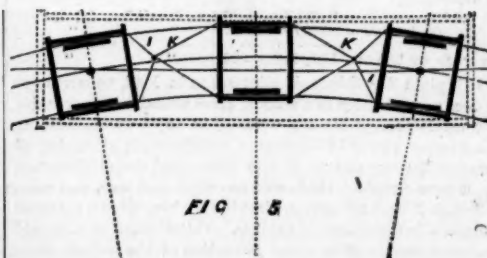
radial thereto, whatever its radius, as shown in Fig. 5.

"This result is achieved by so attaching the axles to the carriages and to each other as to permit them to adapt themselves automatically and with perfect truth to the varying conformations of a railroad. This is effected as follows: The axles, with their axle-boxes, guards and springs are mounted in frames B, C, D, Figs. 1 and 2, separate from the main under-frame E. The end frames B and D have central pivots, H, around which they swivel freely, while the middle frame C is at liberty to slide transversely to the main under-frame E through a range equal to the versed sine L M O of an arc N L O, the chord of which equals the wheel-base N M O—see Fig. 6—and finally the frames are connected to each other by the articulated radiating gear I and K. The action of the combination is simply this: When a vehicle enters a curve, the middle axle and frame C move transversely through the versed sine of the wheel-base arc, and, in doing so, cause the end axles and frames B and D to swivel around their pivots, H, so that all the axes assume positions of radii of the curve.

"There is, it will be noticed, nothing of a special nature, beyond the axle-frames, required in the application of the invention, either in building new carriages, or converting old stock, these frames entailing very little extra cost, for as the main under-frame E is relieved of the strains ordinarily due to curves, it is said that it may be reduced in strength to such an extent as to compensate for the cost of the axle-frames. All standard fittings, such as axle-boxes, guards and bearing springs, are retained without alteration.

"It will be seen that the system permits the construction of vehicles of any length, and secures the unattained objects of the bogie with the advantage of support throughout the length of the carriage. In very long carriages, say 80 ft., eight wheels would be employed, with a modification of the arrangement illustrated.

"The carriage illustrated by Fig. 1 is the new Royal Saloon carriage constructed by the Southwestern Railway Company. * * * Carriages on the system described have been running for about a year on the London, Chatham & Dover Railway, and any passenger traveling from Chatham to London will be able to make the journey in the old and new carriages, and prove for himself the great difference in the comfort of the two systems, especially when traveling by the boat express from Chatham to Herne-hill. The line is



ways the gain is not so much, it is very large in all cases. In proof of the merits of the system, we may point out that it is being regarded with much favor by many locomotive and carriage superintendents, who are necessarily not the least easily satisfied. The facts that the carriage is so thoroughly supported throughout its breadth and length, and that the existing frames, springs, hornplates, etc., are all applicable, as well as the general simplicity of the arrangement, very strongly recommend it. If to the convergence of the axes a simple arrangement by which the outer wheel could run faster than the inner wheel on a curve, so as to avoid torsion of the axle and slipping of one or other wheel, could be added, there would be little to look for in improvement in this direction."

Of the car illustrated and described above the *London Times* of Jan. 30 says: "The Prince and Princess of Wales, in their journey from Waterloo Station to Wimborne on Monday, traveled in a new royal saloon carriage, which is fitted with a new system of radiating axles, invented by Mr. James Cleminson, C. E., of No. 5 Westminster-chambers, Westminster. This system enhances the steadiness and safety of carriages at high speed, enables them to traverse sharp curves with a great reduction in wear and tear to rolling stock and line, and considerably increases the comfort of passengers. It consists in mounting the axles with their axle-boxes, guards and springs in frames separate

from the main under-frame of the carriage. The end frames have central pivots, around which they swivel freely, while the middle frame is so arranged that it can slide transversely. The three frames are connected together by articulated radiating gear, so that they act sympathetically, and, no matter how sharp the curve, each axle instantly assumes a position coincident with the radial lines of that curve, instead of remaining parallel to each other, as in the ordinary construction, in which the wheels grind their way along the sides of the rails. The wear and tear of ties and rails is thus greatly reduced, because the flanges of the tires are always parallel with the rails. This system has been adopted on several lines of railway, both at home and abroad, and experience has shown that it possesses all the qualities and advantages claimed for it, while its application is increasing on those lines where it is already in use, and is gradually extending to others. A practical test of its utility was afforded on Monday on what is known as the Northam curve just outside the Blechynden tunnel, through which the railway passes under the town of Southampton. This curve is only $7\frac{1}{2}$ chains radius, and was traversed at a very high speed by the train, the royal carriage passing over it with a remarkable degree of steadiness. This steadiness and ease of running were observed on other parts of the line."

Contributions.

"Imperceptible Slip" of Driving-Wheels.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A letter from Mr. Thomas F. Krajewski, M. E., which appears in your issue for Dec. 14, 1877, contains an evident explanation (credited originally to a foreign source and given in a somewhat incidental way) for an alleged fact which has excited wide-spread interest and incredulity among railroad men; viz., that there is an important "imperceptible slip" which takes place at high speed. As the phenomenon is one of real importance, it can do no harm to give the facts more definitely.

Such a slippage must inevitably be caused when running fast by the centrifugal force of the counterweights, precisely as experiment has shown. The counterweights are proportioned to balance not only the revolving parts proper, crank-pins, coupling-rods, etc., but also the reciprocating parts, viz., the pistons and rods, cross-heads, and one-half the connecting-rods. The latter do not revolve at all, and hence generate no centrifugal force, and all that portion of the counterweights which is added to neutralize their momentum generates an unbalanced centrifugal force which greatly varies the pressure of the driving wheels on the rails. This variation is easily estimated. The reciprocating parts of an ordinary passenger engine weigh upward of 800 lbs., and the counterweight for them is about 100 lbs. per wheel. A 5-ft. driving wheel, moving at a speed of 40 miles per hour, revolves about 240 times per minute, and at 60 miles per hour about 360 times per minute. Then the centrifugal force at a speed of 40 miles per hour (assuming the radius of the centre of gravity of the counterweight to be 1.75 ft.) will be given by the formula:*

$$\frac{100 \text{ lbs.} \times 320^2 \times 1.75 \text{ ft.}}{\text{constant } 2,935} = 2,900 - \text{lbs.}$$

At a speed of 60 miles per hour it will be:

$$\frac{100 \times 360^2 \times 1.75}{2,935} = 6,500 - \text{lbs.}$$

This centrifugal force is exerted at all times perpendicularly or "normal" to the circumference. Accordingly, when the weight is at the top of the wheel, just so much of the weight of the engine is taken off of the rail and supported by the centrifugal force; on the other hand, when the weight is at the bottom of the wheel the centrifugal force is so much added to the load. In other words, if the average or dead load per wheel be 10,000 lbs., when the engine is moving at a velocity of 40 miles per hour, the load per wheel is alternately

$$\frac{10,000 - 2,900 = 7,100 \text{ lbs.} = 14.2 \text{ tons for all four drivers.}}{10,000 + 2,900 = 12,900 \text{ " } = 25.8 \text{ "}}$$

$$\text{Average } \dots 10,000 \text{ " } = 20 \text{ "}$$

When moving at a velocity of 60 miles per hour, the load is alternately

$$\frac{10,000 - 6,500 = 3,500 \text{ lbs.} = 7 \text{ tons for all four drivers.}}{10,000 + 6,500 = 16,500 \text{ " } = 33 \text{ "}}$$

$$\text{Average as before } \dots 10,000 \text{ " } = 20 \text{ "}$$

It is plain that this rapid alternation in load, occurring as it does several times in a second, gives abundant opportunity for an imperceptible slip without in any way diminishing the average power of the engine, perhaps even increasing its tractive force; and it is also plain that the phenomenon must have a material influence on wear and tear, and may, although it does not appear that it ever has, have a material influence in the failure of bridges. The alternation, it should be noted, has no effect upon the action of the springs, since it is a force originating within the wheels themselves, and not communicated to them. It cannot, therefore, be detected by the riding of the engine.

The engineer quoted by Mr. Krajewski, proposes a new type of engine as a remedy. It would seem a simpler remedy to leave the reciprocating parts partly unbalanced in high-speed engines. The disadvantage would be almost nil when running with steam; when running without steam it might be put up with as the less of two evils, as it undoubtedly would be.

A further puzzle in connection with this subject is the alleged fact—not very strongly supported—that this slippage is noticeably greater on descending grades at the same speed. A reason for some little difference of this kind is that an engine always "weighs more" on the rails when ascending a grade than when descending. In the former case there is, in addition to the dead weight, a certain continuous reaction required in order to maintain a uniform upward motion in the engine. In the latter case, a certain fraction of the weight is continuously neutralized by the

act of descent. Thus, if a one-pound weight be alternately raised and lowered at a uniform velocity the strain upon the string will not be one pound in either case while in motion, but greater in ascending and less in descending. This seems very much like splitting hairs, but the importance of the fact increases with the square of the speed and with the square of the grade. At high speed on some given grade it might possibly cause an observable difference far in excess of its relative importance. At least the cause does undeniably exist and would seem the only possible explanation for such a phenomenon, if it exists.

A. M. W.

Spreading of Rails as a Cause of Accident.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Since the *Railroad Gazette* commenced publishing monthly reports of train accidents, those caused by spreading of rails have been steadily on the increase, while the number of derailments from other causes have gradually diminished. The first monthly reports rarely recorded more than one accident from the spreading of rails, and some months not any were reported. For the month of January, 1878, nine accidents (derailments) are reported from this cause. In August, 1877, there were two derailments from this cause; in July, three; in August, 1878, one; in January, 1877, none were reported. In April, 1877, six; March, 1877, six; in October, 1878, three; and so on along back a few years there is no account of spreading of rails. Doubtless there has been, years ago, derailments that were not recorded that came from spreading of rails, but the records show a steady increase in this class of accidents. In the early days of the writer's experience he had trouble on several occasions by the spreading of rails on new track in course of construction. It sometimes became necessary to get a construction train on a turn-out as soon as possible in order to get a supply train past, and the train would be allowed to go on the siding before the track was fully spiked. No trouble was ever experienced with the "American" type of locomotive in good condition; but we learned after a while that "ten-wheelers" and old outside-connected scrap-heaps would crowd rails out of gauge at a fearful rate, and were not to be trusted on track not thoroughly spiked. An eight-wheeled locomotive, with a pair of "blind" drivers, would work safely on a track temporarily "tacked" down, but an engine with all wheels flanged, and the flanges worn as thin as a knife-blade, and the cone of the drivers reversed by wear, and outside-connected, would shove a rail out from under itself, or climb over it. But on roads that were completed and opened for traffic no cases of spreading of rails were known except those caused by bad shimming. The new, unballasted roads in New England required a great deal of blocking up in severe weather, and much of this work was improperly done. Wedges and round sticks were driven under the rails, raising them to such a height that the spikes could not enter the ties half their length, and there was spreading of rails. But track-men have since learned to shim track and make it safe from spreading, and the increase in the number of accidents from that cause is something worth studying.

It is somewhat singular that with the present standard of railroad construction and maintenance, this class of accident should be on the increase, and the cause or causes thereof should be looked after. Since the reform in railroad practice began, several years since, the writer has considered accidents from spreading of rails as "inexcusable," and that they should be classed as such in the reports. But recent accounts of spreading of rails have caused him to modify this view somewhat. A recent report gives an account of an accident of this class on a road that stands in the front rank of first-class roads in America, and has one of the best-organized and skillfully-managed road departments on the continent. However, accidents of this kind are very rare on the best-kept roads, and that they should occur at all on such roads as mentioned above is rather surprising. The nine accidents in January all occurred in the Southern and Western States, and on lines which, with one or two exceptions, are not classed among the best roads in the country.

It was once the fortune of the writer to undertake the care of a road that had run down to a wretched condition. One day while examining the road on a section with numerous bridges, sharp curves and ties badly decayed, a freight train passed, tearing out four rails. The rails spread, the wheels on the inner side of the curve dropping to the ties, and the rails were rolled over on their sides, rolling outward from the track. An examination of the track in the vicinity showed it to be from one and a half to two inches wide gauge. The rails were badly worn and the spikes were worn through half their thickness. The combined wear of the rails and spikes would make up more than one-half of the excessive width of gauge. On the occasion referred to the train was a long one and some of the rear brakes were set and the locomotive was working steam lively at the time the rails were thrown out. This appeared to draw the flanges against the inner rails—those in the middle of the train—spreading the track so that the rear cars, whose brakes had been released, dropped their wheels inside the rails. There were other places on the road that seemed equally favorable for a spreading of the rails and probably would have been attended with similar results under like circumstances, i. e., by setting the rear brakes and working steam on a long train. From this I conclude that there may be less economy in hauling long trains than is popularly supposed. Of course it is easy to figure the difference in the cost of moving fifty cars in one train, and that of two trains of twenty-five cars each. The cost of oil, fuel, wear and wages of engineman and fireman for extra engine and crew is readily apparent as increasing the cost of transportation as compared to the long train

plan; but when the number of broken pins and draw-heads that are yanked out and delays and consequent rear collisions, and tendency to spreading of rails, together with other inconveniences which tend to destroy track and rolling stock, both by undue wear and increased liability to accident—when all these and more are considered, the economy of hauling long trains may not be real.

It has been mentioned in former articles in these pages that locomotives have been frequently crowded over the rail when holding long trains on a curve and a down grade and when inadequate brake power was distributed throughout the train. Of course a force that would cause a locomotive to climb the rail must bring a tremendous strain on the rails and, besides the wear, exert a decided spreading influence. The slipping of drivers of locomotives while struggling with long trains is expensive, and, taking everything into account, it would seem to be the true economy to run freights in sections that can be handled readily with one locomotive. While estimating the cost of transportation, its effect on permanent way should not be forgotten. There is a constant struggle going on between track and rolling stock, and the manner in which the latter is handled is of vital importance to the former. While the rails are striving (so to speak) to maintain their relative positions, the wheels are forcing them further apart.

When one reads of an accident from the spreading of rails the first causes that present themselves to his mind are an insufficiency of spikes, decayed ties or not enough of sound ones, long trains, and the infernal Mogul, Mogul, Consolidation and other monstrosities and abominations that locomotive-builders have thrust upon the railroad community.

The condition of American railroads has improved of late, and with this fact in view the increase of accidents from the cause under consideration is somewhat anomalous. However, it may be explained by another fact, viz.: The increase in the number of Mogul, and engines of a like character in use. There may be cases of spreading of rails on roads where no Moguls are used. Where soft timber is used for ties, and during wet seasons, and the rails not thoroughly spiked or braced, an ordinary outside connected locomotive will spread rails too fast for safety or profit.

When the Americans produced the "bogie" truck they had done a good thing. They had discovered that a short wheel base was the thing for our light roads and curves of short radius; but they were not satisfied with good things; a locomotive with a four-wheeled truck under its front end and four coupled drivers, and weighing thirty tons, would not destroy a road fast enough to suit a fast people, but the Mogul of sixty tons will do it with "neatness and dispatch," and the railroad fiends who produced it howl with delight over their achievement. The amount of force exerted laterally on the rails by locomotives running on curves has been elaborately figured up by some engineers, but a comparative estimate of the lateral strain brought upon the rails by the different types of locomotives would be interesting and profitable.

The verdict of the whole fraternity of track men is against the use of locomotives of the Mogul type, and they have a long list of first-class reasons to support them in their decision; but the master mechanics are strong, and their will is law. It is believed that a return to the eight-wheeled inside-connected locomotive would be attended with satisfactory results, but that is scarcely to be hoped for.

But this article is getting like the freight trains of the period—too long. To shorten up, then; the object of this article is to call the attention of railroad managers to the increase of accident from the cause under consideration and suggest that the matter is worthy of a thorough investigation. When accidents of a certain class are steadily on the increase it indicates something wrong and should be attended to at once.

When one of the most skillful, hard-working and painstaking engineers in the country, with a well-organized force to assist him, cannot prevent the spreading of track, it is time to look about, to discover what new forces are at work and have the destructive agent removed. But so long as this destroying angel is prowling about like a roaring lion, trackmen should use every effort to strengthen his path that he may be cheated of his prey. Those whose supplies are limited and who find it difficult to keep the rails in place with the means at hand may make use of the following: Double spike on curves, outside and in, or, if you have not spikes enough, take bridge spikes and spike on wooden braces if you cannot get iron guard rail braces. If very bad, put on switch rods—strong ones. Look over the scrap heap and you can find something that you can use to advantage. See that the rails are well curved and lie well on the ties and incline inward. A proper inclination will brace the rails wonderfully.

The following from the *Railroad Gazette* of Jan. 25, 1878, is worth reading and remembering:

Loose or spread rails..... 1877. 1876. 1875. 1874. 1873.

Of the derailments for which causes are assigned the percentage due to spreading of rails was as follows in the several years:

1877. 1878. 1875. 1874. 1873.

10.1 9.2 6.5 3.7 2.6

WM. S. HUNTINGTON.

Transportation in Congress.

In the Senate on the 11th: Mr. Matthews of Ohio, from the Committee on Railroads, reported, with an amendment in the nature of a substitute, the bill introduced by Mr. Dorsey, of Arkansas, on the 15th of January last, in relation to a sinking fund for the Pacific Railroads. Placed on the calendar. (A written report accompanies the bill.)

This bill provides, substantially, a substitute for the withholding of half the payments from government transporta-

* See Trautwine's "Pocket Book for Engineers," p. 404.

tion toward the payment of current interest on the bonds endorsed by the government, and the contribution of 5 per cent. of the net earnings to a sinking fund now required by law. The substitute is the creation of a sinking fund by the sum now due from the Government from transportation, and a yearly payment of \$1,000,000 each by the Central and Union Pacific companies. This sinking fund is to accumulate until 1900, when it is estimated that it will leave a balance of \$51,000,000 due the Government. After 1900 the companies are to pay one-fifth of the debt then due every six months, with the accumulated interest on such fifth at the rate then paid by the government on the greater part of its public debt. The law is to take effect as soon as either company shall accept it.

In the Senate on the 12th:
Mr. Thurman, of Ohio, called up the bill reported by the Judiciary Committee in regard to the Pacific Railroad sinking fund, explained its object, insisted on the necessity of some legislation of this character, said that the proposed bill protected the interests of other creditors as well as the Government, and argued that the bill was fair and just and liberal to the companies, as the Union Pacific could still declare yearly dividends of 4½ per cent. and the Central Pacific of 6.4 per cent. after making the payments required by the bill.

Mr. Davis, of Illinois, from the same committee, supported the bill, and argued especially in favor of the right of Congress to pass such a bill.

Pending discussion, the bill was laid aside.

General Passenger and Ticket Agents' Association.

The semi-annual convention of this association met at the St. James Hotel, in Jacksonville, Fla., and was called to order by Mr. H. C. Wentworth, President, Mr. Samuel Powell serving as Secretary. The roll was called, and the following gentlemen, representing the roads named, answered to their names:

A. Anderson, Jeffersonville, Madison & Indianapolis.
C. P. Atmore, Louisville & Nashville & Great Southern.
Wm. Bonner, Chicago & Lake Huron.
F. E. Boothby, Maine Central.
S. C. Boylston, Savannah & Charleston.
J. M. Broadus, Washington City, Virginia Midland & Great Southern.
J. W. Brown, Indianapolis, Bloomington & Western.
Reau Campbell, Montgomery & Eufaula.
S. E. Carey, New Orleans & Mobile.
A. V. H. Carpenter, Chicago, Milwaukee & St. Paul.
J. W. Cary, Lake Shore & Michigan Southern.
F. Chandler, New Orleans, Jackson & Northern.
F. W. Clark, Carolina Central.
P. L. Cleaport, Northeastern (S. C.).
Geo. W. Cobb, Mineral Point.
L. M. Cole, Baltimore & Ohio.
Geo. L. Conner, Old Colony Steamboat Co.
D. E. Cornell, Kansas Pacific.
G. A. Dadmun, Philadelphia, Wilmington & Baltimore.
G. H. Daniels, Chicago & Pacific.
W. L. Danley, Nashville, Chattanooga & St. Louis.
T. S. Davant, Memphis & Charleston.
W. M. Davidson, Florida Central.
H. M. Drane, Macon & Brunswick.
John Eagan, Indianapolis, Cincinnati & Lafayette.
Charles L. Fitch, Mobile & Ohio.
D. J. Flanders, Boston & Maine.
E. A. Ford, St. Louis, Iron Mountain & Southern.
H. N. Gilson, Tuckerton.
J. M. Hallows, St. Johns.
G. H. Heafford, Missouri Pacific.
F. Heakes, Evansville & Terre Haute.
W. J. Houston, Atlanta & Charlotte Air Line.
M. S. Jay, Memphis & Little Rock.
O. L. Johnson, Norwich & New York Transportation Co.
A. C. Kendall, New York & New England.
J. A. Kingsbury, Marietta, Pittsburgh & Cleveland.
Ray Knight, Selma, Rome & Dalton.
J. F. Leavitt, European & North American.
P. Lowell, Burlington & Missouri River in Nebraska.
A. O. McDonell, Atlantic, Gulf & West India Transit.
C. P. McFaddin, New Jersey Southern.
J. A. Macmurdo, Richmond & Danville.
John W. Mass, St. Louis & Southeastern.
B. F. Mills, Burlington, Cedar Rapids & Northern.
F. R. Myers, Pittsburgh, Fort Wayne & Chicago (Penn. Co.).
Geo. Nason, Mobile & Montgomery.
A. J. Orme, Atlanta & West Point.
S. S. Parker, Louisville, Cincinnati & Lexington.
S. F. Pierson, Cleveland, Columbus, Cincinnati & Indianapolis.
S. B. Pickens, South Carolina.
Samuel Powell, Chicago, Burlington & Quincy.
Henry Pratt, Wisconsin Central.
J. A. Robert, Georgia.
E. St. John, Chicago, Rock Island & Pacific.
E. H. Smith, Central of Georgia.
F. E. Snow, Canada Southern.
Henry Starring, Chicago & Iowa.
Samuel Stevenson, Cincinnati, Hamilton & Dayton.
Jas. L. Taylor, Atlantic & Gulf.
W. A. Thrall, Chicago & Northwestern.
J. E. Utt, Atchison & Nebraska.
H. C. Wentworth, Michigan Central.
W. F. White, Atchison, Topeka & Santa Fe.
D. E. Williams, Mobile and Girard.
B. W. Wrenn, Western & Atlantic.
D. M. Zimmerman, Camden & Atlantic.
J. H. Robinson, Mobile & Ohio.
B. F. Matthias, Paris & Danville.
J. H. Page, International & Great Northern.
A. E. Clark, Atlantic & Great Western.
B. F. Kendrick, Boston, Lowell & Nashua.
A. S. Dunham, Chicago & Eastern Illinois.
Gustave Leve, Georgia & Florida Inland Steamboat Co.
R. D. Carpenter, Jacksonville, Pensacola & Mobile.
S. E. Mayo, People's Line of Steamers.
R. W. Thompson, Jr., Texas & Pacific.
J. M. Hall, Wabash.
F. L. Johnson, Keokuk Northern Packet Co.
Jules Hoyden, Geneva & Cayuga.
F. W. Boyd, Pennsylvania.
Henry Monett, Pittsburgh, Cincinnati & St. Louis.
T. W. Price, Galveston, Harrisburg & San Antonio.
P. W. Barney, Champlain Transfer Co.

The first business of the convention was the election of officers for the ensuing year. Mr. S. F. Pierson was chosen President; S. C. Boylston, Vice-President; George Nason, Member of Executive Committee. The new President, Mr. S. F. Pierson, then took the chair, and upon motion the reading of the annual address was postponed to the afternoon session. Mr. C. P. Atmore was chosen to deliver the address at the next meeting.

EXCURSION AND TOURIST TRAFFIC.

At the September meeting of the General Ticket and Passenger Agents' Association held in Boston, last September, a special committee was appointed to arrange a plan

for "conducting excursion and tourist traffic in the interest of railway owners, as distinguished from scalpers or speculators." The evils complained of are the use of unused portions of excursion tickets sold at reduced rates, by ordinary travelers who have not fulfilled the conditions required of the purchaser of such a ticket. This committee consisted of the following ticket agents: W. A. Thrall, Chicago & Northwestern; A. V. H. Carpenter, Chicago, Milwaukee & St. Paul; George H. Heafford, Missouri Pacific; James Charlton, Chicago & Alton; C. P. Atmore, Louisville & Nashville & Great Southern; John N. Abbott, Erie Railway, and L. P. Farmer, Pennsylvania Railroad.

This committee, with the exception of the two last-named, had a meeting in Chicago last December, at which, by their invitation, representatives of 38 other railroads were present. Mr. C. P. Atmore acting as President and George H. Heafford as Secretary. Oral and written suggestions as to the business in hand were received and discussed. Mr. Henry C. Wentworth, of the Michigan Central, and President of the General Ticket Agents' Association, recommended the total abolition of excursion and tourist tickets, and offered a resolution to that effect, which was adopted by a vote of 28 to 12, the resolution to be so construed as not to prevent a line's using round-trip tickets between points which are local to another line in competition with it. The committee agreed unanimously to recommend this resolution for adoption by the Association. A motion was then made that in case the Association should not adopt this recommendation, a form of "drawback ticket" be recommended for this traffic.

The committee say in their report:

"Your Committee is impressed with the importance of careful procedure, for there are, doubtless, many localities where a judiciously-managed system of tourist or excursion tickets would be productive of an increase of revenue. Whether this would counterbalance the depletion of other localities would suffer is one of the unsolved problems of railway economy which bid fair to be a disturbing element to a satisfactory adjustment of the pending question.

"Preliminary to any effort in that direction, each interested party must decide *pro se* whether or not to waive a present advantage, or suffer a temporary decline for the general welfare. If each and every road comes to the consideration of the matter with the determination to seek only the general good, and abide the calm and matured judgment of the majority so far as to give the decision a trial, much good may be accomplished. If, on the contrary, each road or each section, or any considerable number of roads in different sections, come determined to make no sacrifice, there is no sense in proceeding further with this attempt.

"On one hand, we have those whose experience is that there is a class of people who will not go abroad for pleasure at full rates, whether able or not; reasoning that whatever they pay for such purpose is a clear gain to the railways, and they will not, therefore, go away for a longer journey than can conveniently be accomplished with their own teams, without the railway companies will help them out by standing a share of the expense of a trip through remitting some portion of the rate for ordinary travel.

"Again, others there are whose experience is, that while there are some of the class above described everywhere, the majority of pleasure or health-seekers are going at any rate, and whatever is made off from the first-named class is more than lost on the reduction suffered in favor of the go-at-any-price class. Here is a wide discrepancy in views. It is probably a matter of speculative opinion to a considerable extent, as the varying conditions of affairs in any and every community forbid any mathematical precision in determining whether any given rate would be productive of more revenue than any other rate. Many will figure it right out that a given number of passengers at four cents per mile would yield 33 per cent. more revenue than the same number of passengers at three cents per mile, of course; but there's the rub—whether you will get the same number at four as at three, or within a sufficient approximation to warrant maintaining the higher rate. Your Committee don't undertake to settle these questions. It is a grave question among the greatest and best experienced men in the railway interest whether, as an axiom, it is best to work their lines with reference to maintaining the standard of tonnage or number of passengers, or the derivation of an equal or greater amount of revenue from less carriage. The latter would seem at first sight to be the sound theory, but it is claimed, with great force, that the true way to work up to a large revenue is to create a necessity for the amount of transportation required to produce it, by educating the public up to that standard, by placing luxuries within reach till they become necessities.

"And here comes in a problem which staggers all theories—so many roads are of necessity forced to live by the 'hand-to-mouth' system that the matter of 'building up the property' as an investment or inheritance is practically ignored.

"Whichever of the various theories may be the nearest to the 'philosopher's stone,' or whether the railway interest is financially so situated that 'returns' can be waited for until the country develops the property to a paying basis, is the 'x' of the problem.

"The passenger traffic is confronted by a gigantic and ever increasing evil, which is absorbing a large per centum of the receipts therefrom, through the speculation of outside parties in the tickets issued for conducting a joint tourist or excursion business. And this evil seems to outweigh all theoretical considerations of increase or diminution of revenue through legitimate trade. And it is to attempt to devise a remedy for this evil, if possible, without prejudice to revenue, that your Committee was created, and to the accomplishment of which its thought has been directed, and the result is as stated in the resolution adopted by the advisory meeting, and made the basis of this report.

"Your Committee is aware of the great difficulty, if not impossibility, of accomplishing a full and radical reform at one effort; the abuse is of great and long continued growth—from a puny genesis. The reform will of necessity have to be progressive; hence, in case the Association does not coincide with the opinion of the Committee, that the evil is so great as to demand the discontinuance of the joint tourist or excursion business between the different railways, except as provided in the resolution hereinbefore recommended, it is recommended to abolish the present system of selling tickets at a reduced price, and thus getting them into the hands of the public at less than tariff rate, without any practicable method of preventing their use by those for whom they were not intended, and substituting therefor the plan of selling tickets for the round trip at full tariff rate; and, after their use in the manner contemplated, and by the purchaser, or the party for whom purchased, and so stated in the contract at the time of purchase, and on due proof thereof, as provided in the contract of purchase, to refund to such purchaser, or the party named in the contract as the *cestui que trust*, whatever sum is fixed upon as the rate of discount from full tariff prices, for tourist or excursion business. This, to your Committee, seems by far the most feasible plan for securing immunity from speculation in excursion tickets by any party, short of discontinuing the traffic altogether. And the Committee, as supplementary to the main report above set forth, herewith submits form of ticket and contract to meet the alternative of deciding to continue in the tourist or excursion business."

Appended to the report was a form of ticket or contract in accordance with these recommendations. A long discussion followed, the resolution to discontinue the issue of round-trip tickets being opposed by many members, including nearly all the Southern representatives, and the resolution was finally lost. Mr. A. V. H. Carpenter then moved a resolution to adopt the form of ticket with full rates and a drawback to be allowed subsequently as proposed in the report. This also called forth much opposition, and the meeting adjourned before a decision was reached.

At the afternoon session the annual address was read by Mr. George H. Heafford. It was on "Railroad Advertising." He began in a humorous strain, referring to the famous Jason Excursion after the Golden Fleece, and doubting whether that was advertised as would be thought necessary in modern times. He then went on to speak of the many advertising devices now in use and their doubtful utility, and to the too great expenses now incurred for this purpose. Most of the flaming circulars and wonderfully constructed maps amounted to nothing as far as securing business is concerned. He believed that good advertising paid, but thought that the only really good methods were the insertion of short, pithy notices (paid for) in good newspapers, and the employment of good traveling passenger agents.

Mr. Heafford's address was listened to with much interest, and portions of it were highly enjoyed by the convention. After the reading was concluded, invitations were received to visit Fernandina, St. Augustine and other points.

The discussion of the form of round trip tickets was then resumed, and a resolution was offered to limit the time for the use of tickets and to require some means of identifying the person using them, allowing also the use of a drawback ticket. This also called out much discussion, and finally the matter was referred to a committee (consisting of Messrs. A. V. H. Carpenter, G. Nason, W. A. Thrall, B. W. Wrenn, W. F. White, C. P. Atmore, G. H. Heafford, E. A. Ford and F. R. Myers) to devise a form of ticket which would protect the railroads.

The resolution to abolish round-trip tickets was then reconsidered. It was strongly opposed, especially by the Southern roads having a share in the Florida business, was amended, and was finally lost by a vote of 45 to 24. It may be considered as a final decision against the abolition of round-trip tickets. The convention then adjourned to the following day.

The full report of the second day's proceedings has not yet reached us. A telegraphic report, however, states that the convention, before adjourning, selected Chicago as the place for the next meeting.

The Windsor House Meeting on East-Bound Rates.

In pursuance of the object aimed at by the recent meeting of Western railroad managers, at the Grand Pacific Hotel in Chicago, recently, and of other meetings held east and west since last October, a joint meeting of the managers of Eastern and Western lines interested in the traffic from the West and Northwest to the East was held at the Windsor House, New York, beginning in the forenoon of Thursday, March 7, the object being to consult on the practicability of establishing regular rates on this traffic, and maintaining them hereafter.

Companies were represented as follows:

WESTERN COMPANIES.

Baltimore & Ohio, by M. L. Doherty, General Freight Agent.
Canada Southern, by W. K. Muir, General Manager and W. H. Perry, General Freight Agent.
Chicago & Alton, by J. C. McMullin, General Superintendent.
Chicago & Lake Huron, by C. B. Peck, Receiver.
Cleveland, Columbus, Cincinnati & Indianapolis, by H. B. Hurlbut, Vice-President.
Detroit & Milwaukee, by Alfred White, General Freight Agent.
Flint & Pere Marquette, by H. C. Potter, General Manager, and D. Edwards, General Freight Agent.
Grand Trunk, by L. J. Seargeant, Traffic Manager.
Great Western, by G. B. Spriggs, General Freight Agent.
Indianapolis & St. Louis, by H. B. Hurlbut, Vice-President.
Lake Shore & Michigan Southern, by John Newell, General Manager.
Michigan Central, by H. B. Ledyard, General Manager, and J. A. Grier, General Freight Agent.
Ohio & Mississippi, by M. L. Doherty, for the Receiver.
Pennsylvania Company, and Pittsburgh, Cincinnati & St. Louis, by J. N. McCullough, Vice-President, and Wm. Stewart, General Freight Agent.
Vandalia Line, by J. E. Simpson, General Manager.
Wabash, by J. M. Osborn, General Freight Agent.

EASTERN COMPANIES.

Baltimore & Ohio, by M. L. Doherty, General Freight Agent.
Boston & Albany, by Wm. Bliss, General Manager.
Central Vermont, by L. Mills, General Superintendent of Traffic.
Erie, by G. R. Blanchard, Assistant to the Receiver.
Grand Trunk, by L. J. Seargeant, Traffic Manager.
New York Central & Hudson River, by J. H. Rutter, General Traffic Manager.
Pennsylvania Railroad, by A. J. Cassatt, Third Vice-President.

There were also present:

Albert Fink, Trunk Lines Commissioner.
N. Guilford, Western Commissioner.
Mr. J. N. McCullough, of the Pennsylvania Company, presided, and opened the meeting by stating its objects.
It was announced by Mr. Blanchard, of the Trunk Lines Executive Committee, that it was desirable that the decision on the subjects under consideration should be made by the Western companies exclusively, as they concerned east-bound traffic.

Mr. Fink addressed the meeting at some length; presented statistics of the distribution of the traffic from some leading Western shipping points, from which it appeared that the proportion obtained by each road has not been notably different since the railroad war than at other times, so that no one seemed to have gained any traffic by the change; he also showed the losses that have been incurred by the great reduction of rates, which, estimating the receipts at a regular tariff of 35 cents, instead of 40 cents as last agreed upon and maintained for some weeks, have amounted to many millions; and he urged not only a restoration of rates, but the adoption of measures which would prevent future troubles of this kind. But he had no faith that the irregularities and cutting of rates could be prevented by any agreement or compact which did not take away the motives for such action. But if the roads should agree to divide the traffic at the competing points, there would be no temptation to cut rates. In no other manner did he think rates could be maintained. If the companies could not agree upon the proportion each should have, they should leave the division to arbitration. No decision of an arbitrator could injure any company so greatly as the continuance of the present state of affairs.

Mr. G. R. Blanchard, of the Erie, and Mr. J. H. McMullin, of the Chicago & Alton, endorsed Mr. Fink's views, and

finally, Mr. H. B. Hurlbut of the Cleveland, Columbus, Cincinnati & Indianapolis, offered the following:

"Resolved, That it is the sense of this meeting that it is desirable to establish equitable agreed divisions of east-bound tonnage from the principal competing points and districts; and that the Commissioners be requested to report a detailed plan for carrying the same into practical operation. And we agree to abide by the plan and percentages they may, after full hearings, so assign to each company, for the period of six months."

No objection was made to this, and on taking a vote all the lines represented voted for adopting the resolution, except the Lake Shore & Michigan Southern, whose representative, Mr. Newell, stated that he was not authorized to act upon that subject without further conference with the President of his company.

The meeting then adjourned until 8 p. m., when Mr. Hurlbut offered his resolution in the following modified form: "Resolved, That it is the sense of this meeting that it is desirable to establish equitable agreed divisions of east-bound freight (not including live stock) from the principal competing points; and that the Commissioners be requested to report a detailed plan for carrying the same into effect; and we agree to abide, for the period of three months, by the plan and percentages they may, after full hearings, so assign to each company."

This resolution was adopted by a unanimous vote of all the roads represented.

REPORT OF THE COMMISSIONERS.

Commissioners Fink and Guilford then submitted the following report:

"To carry out the intention and spirit of the resolution passed by the meeting, the committee appointed to recommend a plan for a division of the east-bound tonnage recommended:

"1. That the division shall be made from the following points: Chicago, Milwaukee, Detroit, Port Huron, Toledo, St. Louis, Louisville, Mississippi River points, Cincinnati, Indianapolis, Peoria, and such additional points as may hereafter be found necessary.

"2. The said division of business is to take effect on the same day that rates are restored.

"3. From that day daily reports of the business transacted by each competing line be made to the Commissioner of the Western roads or agents appointed by him, and that a condensed statement of said reports be furnished to each competing road at each point.

"4. The Commissioners, as soon as practicable, shall hear all questions involved in the divisions of east-bound tonnage, and shall endeavor to secure an agreement thereon between the railway companies interested.

"The said Commissioners, in case of disagreement, shall determine the percentages of the tonnage to which each competing line is entitled, and prescribe the necessary rules and regulations for carrying the same into effect.

"In case of a decision having to be made by the Commissioners, the several parties interested in the same shall present all information and facts bearing on the subject, and the same shall be taken into consideration by the Commissioners, without restriction as to any particular basis upon which said decision shall be made.

"5. In case questions of any nature arise in the course of carrying out this agreement, or which are not provided for herein, and which cannot be settled between the interested parties, they shall be referred to the Commissioners for decision; and if such decision is not satisfactory to the parties interested, they may appeal to arbitrators to be selected by themselves; but pending such appeal the decision of the Commissioners shall be binding and shall be carried out.

"6. No deviation from the rates which may be established from time to time shall be made by any of the roads except by authority of the Western Commissioner, and with a view of effecting the agreed division.

"7. Pending the decision of the Commissioners regulating the division of business, they shall see that no road receives an undue proportion of business, and shall be empowered to take the necessary measures to prevent the same.

"8. Should questions arise as to business of cross roads or feeders of the main lines, which cannot be satisfactorily adjusted in conformity with the object and intention of this agreement, the roads shall take such action as the Commissioners shall determine upon such traffic.

"We recommend that this report, with such changes and amendments as may be made by this meeting, shall constitute a contract between the parties, and be signed by them. The Commissioners to secure the consent of the parties not represented, viz.: Chicago, Milwaukee & St. Paul; Chicago & Northwestern; Chicago, Burlington & Quincy; Cincinnati, Hamilton & Dayton; Indianapolis, Cincinnati & Lafayette; Indianapolis, Peru & Chicago; Atlantic & Great Western; Indianapolis, Bloomington & Western; Toledo, Peoria & Warsaw; Chicago, Rock Island & Pacific; Peoria, Pekin & Jacksonville; Illinois Midland; Chicago, Pekin & Southwestern."

This report, submitted by Messrs. Fink and Guilford, was unanimously adopted.

On motion of Mr. Blanchard it was resolved unanimously that east-bound rates be advanced Monday, March 11, to the basis of 30 cents per 100 lbs., fourth class, from Chicago to New York.

The meeting then adjourned subject to the call of the Chairman.

American Exhibitors at the Paris Exposition.

From the list of American exhibitors at Paris we take the following, who exhibit the articles with which our readers are most concerned:

Oliver Ames & Sons, North Easton, Mass.—Shovels.

Allen & Rueter, No. 302 Broadway, New York—Pneumatic Riveter.

Asher & Adams, New York—Maps.

American Watch Co., Waltham, Mass.—Watches and Movements.

American Fence Co., No. 86 Mangin street, New York—Fence.

American Society of Civil Engineers, New York—Plans and Models.

R. H. Allen & Co., New York—Warehouse Trucks.

Louis Bogger, Washington, D. C.—Glass Bearings.

Barnam Richardson Co., Lime Rock, Conn.—Chilled Car Wheels and Cold Blast Charcoal Iron.

Baldwin Locomotive Works, Philadelphia—Locomotives.

Brown & Sharp Manufacturing Co., Providence, R. I.—Machine Tools.

J. R. Baker, New York—Anti-Friction Metal.

Blake Crusher Co., New Haven, Conn.—Stone Crusher.

J. G. Brill & Co., Philadelphia—Street Car.

George V. Cresson, Philadelphia—Shafting.

Crane Brothers Manufacturing Co., Chicago—Malleable Iron Fittings.

Henry Disston & Sons, Philadelphia—Saws and Files.

C. H. Delamater & Co., New York—Shearing Machines.

F. H. Dudley, New York—Plans.

Austin G. Day, New York—Telegraph Wire.

Dixon Crucible Co., Jersey City, N. J.—Graphite, Pencils, etc.

W. & B. Douglass, Middletown, Conn.—Pumps.

Darling, Brown & Co., Providence, R. I.—Hand Tools.

Thomas A. Edison, Menlo Park, N. J.—Telegraph and Electrical Instruments.

M. B. Edson, New York—Gauges.

Eames Vacuum Brake Co., Watertown, N. Y.—Vacuum Brakes.

Fairbanks & Co., St. Johnsbury, Vt.—Scales.

J. F. Fales, New York—Baxter Engine.

J. A. Fay & Co., Cincinnati, O.—Wood-working Machinery.

L. B. Flanders, Philadelphia—Planing Machine.

Gardner & Co., New York—Perforated Seats.

E. & F. Gleason, Philadelphia—Wood-working Machinery.

David C. Green, New York—Feed-water Heater.

Merritt Gally, New York—Speed Regulator.

Elisha Gray, Chicago—Speaking Telephone.

Home Scale Co., Rutland, Vt.—Scales.

Hercules Co., Newark, N. J.—Lever Jack.

Hoopes & Townsend, Philadelphia—Bolts and Nuts.

Anton Heim, New York—Leather Belting.

J. B. Hoyt & Co., New York—Leather Belting.

E. Harrington & Son, Philadelphia—Hoisting Machine.

Lobdell Car-Wheel Co., Wilmington, Del.—Car Wheels and Chilled Rolls.

Ezra F. Landis, Lancaster, Pa.—Portable Forge.

Morse Machine Co., New Bedford, Mass.—Twist Drills.

National Car Spring Co., New York—Car Springs.

Northampton Emery Wheel Co., Leeds, Mass.—Emery Wheels.

Nathan & Dreyfuss, New York—Lubricators, etc.

Ohio Tool Co., Columbus, O.—Hand Tools.

F. S. Pease & Co., Buffalo, N. Y.—Oils.

Pancoast & Maule, Philadelphia—Gas-pipe Cutter.

Pullman Palace Car Co., Chicago—Model of Sleeping Car.

Philadelphia & Reading Railroad Co.—Locomotive.

Philadelphia & Reading Coal & Iron Co.—Coal and Manufactures of Iron.

Pickering & Co., Portland, Conn.—Governor.

S. E. Robinson, Newark, N. J.—Wrenches.

C. B. Rogers & Co., Norwich, Conn.—Saws and Planer.

C. B. Richards, Hartford, Conn.—Steam Indicators.

John Stephenson & Co., New York—Street Cars.

Stridinger & Co., Brooklyn, N. Y.—Model of Blasting Apparatus.

Stephens Vise Co., New York—Vises.

E. K. Sergeant & Co., Newark, N. J.—Boiler Detergent.

Stow Shaft Co., Philadelphia—Flexible Shafts.

Charles A. Schieren, New York—Leather Belting.

Stanley Rule & Level Co., New Britain, Conn.—Rules and Levels.

John J. Tower, New York—Locks, Wrenches, etc.

United States Wind Engine and Pump Co., Batavia, Ill.—Wind Mills.

Valentine & Co., New York—Varnishes.

Victor Sewing Machine Co., Middletown, Conn.—Drill Chucks, etc.

Westinghouse Brake Co., Pittsburgh, Pa.—Atmospheric Brakes.

Whitney & Sons, Philadelphia—Car Wheels.

Walton Bros., New York—Lanterns, etc.

D. E. Whiton, West Stafford, Conn.—Lathe Chucks, etc.

The above list shows two exhibitors of locomotives, one being a railroad company which does not manufacture for sale; no exhibitor of railroad cars, but one (Pullman) of a model of a car; two or three exhibitors of street cars, which are already pretty well exhibited on the streets of many of the principal cities of Europe; three or four exhibitors of cast-iron car-wheels; and apparently no exhibitors of such railroad appliances as switches and switch stands, frogs, crossings, rail joints, nut-locks, track tools, and the scores of other articles which are purchased in this country in so many varied and ingenious forms.

The Missouri Law Regulating Rates.

In *The Public* of Feb. 28 the following is published. It carries the more weight because the editor of *The Public* was long a resident of Missouri, and made a special study of transportation questions:

Three or four years ago, when the so-called Granger excitement was prevalent at the West, and all sorts of small politicians were marching to the front with ignorant devices to protect the "dear people against soulless corporations," the Legislature of the State of Missouri passed an act to regulate the rates and to create railway commissioners. That the railroads in that State were generally bankrupt, notwithstanding the alleged extortion of their charges, did not seem to the Solons of the Legislature a matter of the slightest consequence. But, being considerably more ignorant than legislators of like temper in other Western States, they contrived to pass an act which for solemn and owlish stupidity probably has nowhere been surpassed. It assumed to require an immediate reduction in rates charged by all roads in the State, and persons prominent in connection with the Granges were selected commissioners to enforce the sovereign will of Missouri.

They presently found, as every member of the Legislature ought to have known from the first, that there were a few other laws of the State, which had been passed before the vast wisdom of modern legislators was recognized. For instance, there was a law chartering the Louisiana & Columbia Railway Company, passed in 1837, and amended at sundry times, and at sundry times extended in its provisions to other companies, and many other acts. Under these acts railroads had been built with the charters, were now owned by the existing companies, and these charters absolutely exempted the companies from all control by the State as to rates below certain named limits. True, the right was specially reserved to the State to purchase the roads after forty years, but with four years' notice. Charters more or less of this character were granted until 1845, and it may be doubted whether anybody knows how many of them are still alive, and lawfully in possession of existing railways.

In some of these old charters rates were not limited at all; in others absolute power was given to directors to fix rates, provided they did not charge more than 10 or 12½ cents per mile. In 19 of the original charters which we happen to have at hand, the following words appear:

"Said company shall have general power to use, manage, control and enjoy said railroad; shall determine what kind of carriages shall be used thereon, and by whom and in what manner, and shall determine the terms, conditions and manner in which merchandise, property and passengers shall be transported thereon. * * Said company may receive such tolls and freights as may be determined on by the directors."

Other charters, many in number, limited the rates to ten, and some to seven, cents per mile. Others merely extended to the proposed road "all the franchises previously granted" to some other road of the classes already named. Others still authorized branches to be built, with the same franchises, from almost anywhere to almost anywhere else. Thus the Iron Mountain had revived for its benefit, in 1851, the provisions of the charter of the St. Louis & Bellevue, granted in 1837, and was authorized to build "any extension into the southwestern part of the State." In 1845, a general act provided in section 7 that all charters subse-

quently granted could be amended or repealed. But, in 1851, this little obstacle was removed for the Missouri Pacific by an act providing that this section should not apply to that road, and in the same or similar ways very many other roads were afterward exempted. We have forty-nine charters of Missouri roads, all believed to be legally alive and rightfully owned by some company, which thus surrenders the power of the State to control rates.

In due time it dawned upon the railroad commissioners that there were difficulties. But they looked to the reorganization of some roads about ten years ago, and found in the acts of 1868 provisions that the roads then reconstructed should not be subject to the control of the state for ten years thereafter, and then concluded that, although the act creating them and empowering them to control rates at once was actually void when it was passed, because not applying to any company, still it might apply to some roads in 1878. And thus, after hibernating for some years, the solemn act of the Missouri Legislature now emerges, and the commissioners propose to enforce it. We venture to predict that they will raise for the state the largest crop of law suits ever produced within a year in any civilized country, and that the lawyers hired by the state will recover ten times as much in fees as the state will ever recover in penalties for refusal to obey its latest act. To what extent the state could or did change its original contracts at the time of reorganization will be found a difficult question. Companies which are fully empowered, in original grants or contracts to charge higher rates, may of course resist. As these grants will be found in possession of nearly every railroad company in Missouri, the state is likely to find out in due time what it costs to elect donkeys to make its laws.

ANNUAL REPORTS.

United States Rolling Stock Company.

The report is for the calendar year 1877.

The productive property of this company consists of the following cars and locomotives, the list of which shows how many were in service and how many idle at the close of 1877, as well as the total number:

Description.	In service.	Idle.	Total.
Locomotives.....	52	52	104
Passenger cars.....	41	24	65
Combination cars.....	3	1	4
Baggage cars.....	16	7	23
Box cars.....	1,926	109*	2,035
Stock cars.....	432	19*	501
Gondola cars.....	994	29	1,013
Oil tank cars.....	119	11	130
Refrigerator cars.....	118	12*	130
Dump coal cars.....	25		25
Flat cars.....	125		125
English coal cars.....		26	26

* These cars idle at Chicago works undergoing repairs and improvements.

The following is the balance sheet:

ASSETS.	
Construction—Total cost of stock.....	\$5,047,074.85
Current balances due from lessees.....	146,712.10
Sundry Drs.....	3,479.90
Cash and cash assets.....	410,309.34
Chicago works and materials.....	148,272.11
Urbana buildings and tracks and materials.....	88,307.66
Office furniture and fixtures.....	2,595.66
Suspended accounts.....	1,215,995.29
	\$7,062,746.91
LIABILITIES.	
Capital account, total share issue.....	\$5,000,000.00
Reserve account to Dec. 31, 1876.....	404,767.59
Dividends uncalled for, Nos. 5, 6, 7 and 8.....	2,203.14
Bills payable.....	72,976.30
Chicago mortgage.....	60,000.00
Sundry Crs., due for current supplies, pay rolls, etc.....	37,635.61
Insurance fund.....	14,219.25
Reserve in suspense.....	1,215,995.29
Income account, applicable to dividend and reserve.....	254,949.73
	\$7,062,746.91

* Exclusive of dividend No. 8 already paid.

The United States Rolling Stock Company was organized primarily to supply rolling stock, at a rental agreed upon beforehand, to the Atlantic & Great Western Railroad. Its equipment was purchased when prices had reached their maximum, but only a very short time before they began to fall. The present prices are not much more than half as great as it paid, so that its capital naturally is now much greater than the value of its property. As will be seen by the President's report, the charges made in reconstructing cars will gradually make a change in this.

The income account shows:

Income Derived from	
Rental.....	\$346,550.33
Mileage.....	231,397.15
Interest.....	7,638.86
Profit on work done for others at Chicago Works.....	783.44
Total.....	\$586,369.78
Charges against Income.	
Repairs of rolling stock.....	\$98,460.62
Repairs of buildings.....	1,042.30
Freight account.....	3,222.49
Narrow-gauging.....	1,154.79
Storage.....	1,250.94
Legal expenses.....	8,473.27
Taxes..... (not paid by lessees and on.....	11,676.09
Insurance..... (Chicago and Urbana properties.....	14,453.62
General expenses.....	77,577.08
Loss by uncollectable accounts.....	\$10,419.34
Loss by depreciation on furniture.....	648.91
	11,068.25
Balance net income for the year.....	357,989.73
	\$586,369.78

To Dividend No. 8, paid Sept. 1, 1877.....\$103,040.00

Balance applicable to dividend and reserve.....254,949.73

This net income is equivalent to 7.1 per cent on the capital stock of the company. The necessity of providing a large reserve for renewals, however, make this an improper measure of the company's profits. The dividends actually paid from the earnings of the year were 4½ per cent, the same as in 1876.

The receipts from each class of rolling stock for three years have been:

	1875.	1876.	1877.
Locomotives.....	\$69,983.85	\$104,508.69	\$77,047.83
Cars—			
Passenger.....	39,476.81	52,442.17	28,846.09
Combination.....	2,366.07	2,529.60	1,975.94
Baggage.....	8,676.65	5,940.28	5,515.82
Box.....	125,497.51	161,827.42	145,785.22
Stock.....	66,139.46	69,980.87	1,279.48
Gondola.....	82,457.33	80,644.15	80,026.93
Oil tank.....	17,055.06	22,811.34	10,175.44
Flat.....	13,491.96	13,218.72	4,582.56
Dump coal.....	4,810.28	2,587.56	1,725.00
Refrigerator.....			9,590.02
Car mileage.....	44,263.92	36,775.30	231,397.15
Total.....	\$474,230.40	\$555,267.10	\$557,947.48

The passenger cars here are seen not only to have earned very much less than in the centennial year, when there was an exceptional demand for them, but 26 per cent. less than in 1875; and there seems to be, indeed, great difficulty in renting such stock. The locomotive stock, too, is hard to dispose of. The cars which earned more in 1877 than in 1876 are not to be made out from the report, as the increase was almost solely in car mileage earnings—that is, in the allowance per mile actually run, the same as is paid for cars running from one road over another. This allowance was one cent per mile for the first half of the year, and three-quarters of a cent afterward.

For 1877, 40 per cent. of the company's earnings were from such payments for mileage. Not one-fifth as much was ever received from this source before, indicating that this method of hiring cars has been preferred recently.

PRESIDENT'S REPORT.

The report of Mr. J. B. Hodgskin, the President of the company, is as follows:

"The first half-year of 1877 showed an increase in earnings over the corresponding half-year of 1876 of \$24,779.66. This growth in earnings has not been maintained during the second half-year, although the decrease for the latter period, as compared with the corresponding period of 1876, is only nominal.

"The slight decline and the failure to show an increase are due to two causes. As already advised in the report of last July, the railroad companies of the country, in June last, by unanimous action, reduced the mileage on all freight cars from one cent to three-quarters of one cent per mile; for all cars leased on current mileage this has reduced our income one-fourth, while on renewals of leases at fixed rentals, we have had to submit to a similar reduction. The second and most important cause, however, is that the last half-year of 1877 compares with the Centennial Exhibition year 1876, when the passenger traffic of the country was unprecedented. The falling off in earnings from locomotives and passenger cars, due to this cause alone, during the six months under consideration, reaches nearly \$40,000. In view of the two circumstances named, it is satisfactory evidence of healthy growth that the decline has been so slight.

"The gross earnings for the entire year 1877 are in advance of those of 1876 by \$13,426.46; but the net earnings, established according to the former system of accounts, show a decrease of \$10,779.56—a total difference of \$24,206.02—against the present year. This difference is mainly due to increased taxes, increased legal expenses, and losses by bad debts. The increased taxation is upon our Chicago works, which did not appear at all last year. No amount of care and watchfulness could guard us entirely from losses by bad debts in times like the present. We can only congratulate ourselves upon our comparative immunity. The increase in legal expenses has been largely due to the same cause. In other respects our business and expenditures have not varied materially.

"In accordance with the wishes of many shareholders, a change has been made in the method of dealing with the repairs, with respect to income. Heretofore Income Account was charged every year with only so much of the cost of repairs as was properly chargeable to lessees, but not recovered from them. All other repairs, in the nature of renewals and replacements, to maintain the entire rolling stock in a condition of first-class efficiency, were charged to Reserve Account, which was originally created for the purposes of a sinking fund, to meet the gradual wearing-out of the equipment, and to provide for its ultimate complete reconstruction. It has been objected, with some force, that the separation of these two different classes of repairs is illusory, and that the Reserve Account itself is liable to misinterpretation. It has, therefore, been deemed best to abandon the separation, and to charge annually all repairs of whatever description (other than actual betterments) to Income Account direct. The latter will thus show each year the result of the year's business in its entirety.

"The Income Account this year is submitted on the foregoing basis. It shows absolute net earnings of \$357,989.73, out of which a dividend of 8s. per share was paid in August last, leaving \$254,949.73 to be still disposed of. I recommend the payment of a dividend of 2½ per cent. or 10s. per share, amounting to about \$126,000, and leaving \$128,949.73 to be carried to Reserve.

"The total amount of repairs, \$98,460.62, represents by far the largest amount of work done by us during any one year. Owing to the numerous changes in railroad business and management an unusual number of cars have changed lessees, and consequently required thorough overhauling at our expense; and since the possession of the Chicago shops we have allowed no car to pass through our hands without making it in every respect equal to new. 1,177 freight cars have been thus overhauled or rebuilt during the year, besides 9 passenger coaches, 3 baggage cars and 10 engines. In this work our Chicago shops have been of extraordinary advantage to us, saving at least thirty per cent. on the total cost of repairs, besides turning out a superior quality of work. Not only do the improved condition of the equipment give great satisfaction to lessees, but such lots as have returned to us after eight or ten months' service show a minimum of repairs required. I estimate that we have reached the maximum of annual repairs, and that in no future year is a larger sum likely to be required to maintain the present degree of efficiency.

"In addition to the repairs, the sum of \$33,119.14 has been expended in entirely new construction and betterments, making an actual addition to the numbers of the equipment of 12 refrigerator cars (2 not yet completed) and 25 gondolas, while a further sum of \$39,575.69 has been drawn from the reserve to pay for the conversion of 115 box and 5 stock cars into refrigerators, and of 75 dump cars into gondolas, besides an infinite variety of minor work. From these newly-constructed and converted cars the increased income has been derived, which has enabled us to nearly offset the great reduction in rates during the latter half year.

"In all reconstruction of the kind just mentioned Construction Account is in all instances credited with the full original cost of the old cars, while all the old material enters into the new cars only at its present market value, so that in every case of reconstruction the new car stands upon the books at its present value, which is considerably below its former valuation or cost. In this manner the construction account will be gradually brought to a point where the entire equipment will always represent its actual market value, irrespective of cost. If the shareholders approve, the practice will be persevered in until the equipment itself, irrespective of all other assets, shall represent at market values the full par of the company's share capital.

"A further change has also been made in Reserve Account. It will be remembered that this account is represented largely on the other side of the balance sheet by the amount due from the Atlantic & Great Western Railroad Company and the claim against Messrs. Bischoffsheim & Goldschmidt, both in litigation. In order to render the accounts in the clearest possible manner, I have caused these litigated amounts, together with every other doubtful or disputed account, to be transferred to "Suspended Accounts," leaving every other item on the debit side of the balance sheet as an unquestioned asset. A similar amount

has then been transferred from Reserve Account to "Reserve Account in Suspense," leaving an unquestioned balance on Reserve Account of \$404,767.59, which will be swelled by the present balance of income to \$533,717.82. The value of the Reserve Account in Suspense, will, of course, in a great measure turn upon the result of the two pending lawsuits. But whatever the result may be, it is just and proper that the amount should stand entirely disconnected from the other assets of the company.

"In explanation of these changes in the accounts it is but fair to remind the shareholders that the business of the company, at the time of its incorporation, was entirely novel, and that it has since been the subject of many fluctuations and changes, and that only within the last two years has it assumed its present regularity.

"No decisive result has been obtained in either of the two great lawsuits of the company, but satisfactory progress has been made in each of them.

"With the Receiver of the Atlantic & Great Western we have unfortunately an additional point of difference, he claiming the right to pay us the reduced rate of current mileage on a part of the cars leased to him; we claiming that our contract calls for the specific rate of one cent per mile. The matter has been referred to the Court by which the Receiver was appointed, but has not yet been decided.

"The year just closed has been an extremely trying one to every kind of business in all parts of the world alike. The results obtained by your company, while not brilliant, are, under the circumstances, gratifying and encouraging. They have been largely to the untiring energy and devotion of every officer of the company, aided by the advice and support of an active and watchful board of directors, to all of whom my warmest thanks are due."

THE SCRAP HEAP.

Railroad Manufactures.

The Rogers Locomotive Works, at Paterson, N. J., last week shipped a locomotive to the Atlantic, Gulf & West India Transit road in Florida.

The Danforth Locomotive Works, at Paterson, N. J., have just completed an iron bridge of 175 feet span, and are building one of 300 feet span to go to Haiti.

The Tanite Co., at Stroudsburg, Pa., last year shipped \$60,000 worth of its emery goods to England to fill orders.

The Westinghouse Air Brake Co., of this city, have received orders from English, French and Belgian railroads, aggregating one million and a quarter of dollars in gold. The trade in the United States is duller than in former years.—Pittsburgh Telegraph.

The Verona Tool Works, at Pittsburgh, are running to their full capacity.

Miner & Brother, at Weissport, Pa., are at work on a large order for pumps from a New York firm.

The Scottsdale (Pa.) Rolling Mill started up Feb. 25, after a stop for repairs.

The Morse Bridge Works, a new concern, have purchased four acres of land at Youngstown, O., and have begun the erection of shops there. The company has already secured several orders for bridges.

The Pittsburgh, Fort Wayne & Chicago Railway Co. is receiving proposals from all the car builders in the country for the construction of 1,500 new box-cars, to be finished at as early a date as possible. The company is now building 500 freight cars at the Fort Wayne shops.—Chicago Times.

Lucy Furnace, at Pittsburgh, during the week ending Feb. 16 made 778 tons, 1,506 pounds of pig iron, of which 91.9 per cent. was graded No. 1; 0.6 per cent. No. 2, and 7.5 per cent. No. 3. This was 14 tons in excess of the best previous week of the furnace, and eight tons more than the largest week's run of the Isabella Furnace, which had heretofore claimed the heaviest week's run ever made.

The Louisville Bridge & Iron Co. has the contract for five spans of through wrought-iron triangular truss, each 110 feet long, on the line of the Atlantic, Mississippi & Ohio Railroad, over the James River, at Lynchburg, Va.

The Pennsylvania Railroad Company has built at Altoona a passenger train mounted on 42-inch steel-tired wheels to be run on trial.

The contract for a new bridge over the Little Androscoggin on the Maine Central road has been let to Morrison, White & Co. The same firm is building a bridge on the Eastern Railroad at Lynn, Mass.

The steamers Wickham with 14, and the Timor with 26 of the locomotives built at the Baldwin Locomotive Works for the Russian Government, sailed from Philadelphia this week. The men who are to put up the engines have already gone.

The Patten Car Works, at Bath, Me., have orders for a passenger and a combination car, 30 box and 6 flat cars for the Rumford Falls & Buckfield road.

The car shops of Osgood Bradley, at Worcester, Mass., are building 40 open excursion cars for the New York & Manhattan Beach road.

The property of the Milwaukee Iron Co., at Milwaukee, Wis., is now owned by Mr. S. P. Burt, of New Bedford, Mass., as trustee for the bondholders, who bought it as the recent foreclosure sale. The lease of the rolling mill to J. J. Hagerman will expire in a few days, when the property will be transferred to the North Chicago Rolling Mill Co., under a lease, probably for five years. The blast furnaces will be run on Bessemer pig for the North Chicago steel mill, and the rolling mills will be run as heretofore. The works will hereafter be known as the Bay View Iron Works. It is expected that arrangements will be made for the final purchase of the works by the North Chicago Co.

The Cambria Iron Works, at Johnstown, Pa., are adding a large trip-hammer and two sets of rolls to their steel blooming mill.

Porter, Bell & Co., at Pittsburgh, recently shipped a narrow-gauge engine to Washington Territory and one to a lumber road in California. They are building two engines for a street railroad in New Orleans.

The Standard Steel Co., of Philadelphia, are making 600 steel tires for the Hudson Paper Car Wheel Co.

The Barney & Smith Manufacturing Co., at Dayton, O., are at work on orders for 36 passenger coaches; 2 sleeping coaches; 1 business car; 350 grain cars; 200 gondola cars, and 150 narrow-gauge box and flat cars.

W. H. Baily & Co., of the National Locomotive Works, at Connellsville, Pa., have recently shipped narrow-gauge engines to Ohio and Illinois, and are building some mine engines.

Verdict of the Coroner's Jury on the Tariffville Bridge Accident.

The four members of the Coroner's jury who refused to sign the report or verdict of the majority, have submitted an opinion, in which they say, that in their opinion, the bridge was in a safe condition for a train with one or two engines at the time of the disaster. They claim that the bridge was constructed on scientific principles, of good material, and that its strength had not become deteriorated by reason of exposure to the elements. That the accident was caused by the derailment of some portion of the train, causing a shock sufficient to cause its fall below; that the President, Super-

intendent and directors are in no way responsible for the accident, but used all possible care to protect life. In conclusion they say they do not consider themselves competent to make any suggestion or to give any advice as to the further management or construction of the road. This verdict is in direct contradiction of the report rendered by the majority, who gave as their opinion that the accident was the result of a weakness of the material in the bridge caused by exposure to the weather, and that there was no derailment of any part of the train.

Hand Cars.

A correspondent writes: "Will you inform me where I can purchase a light hand car? I would not want it to exceed 150 lbs. or thereabouts." Will manufacturers of such cars please send their addresses to this office? We have also had several inquiries recently for "steam hand cars." Would it not be well if the manufacturers of both classes of cars were to place their lights on somewhat more conspicuous candlesticks?

A Frightened Engineer—How "Ed." Cole Got a Free Ride on a Locomotive.

Some two or three years since a tame Indian got hold of too much fire-water and sat him down on the track of the Detroit & Milwaukee Railroad one dark night and was knocked into the happy hunting grounds by a locomotive passing that way.

The engineer has been looking for the ghost of that Indian ever since, and always passed that place with fear and trembling. One day, Ed. Cole, who had been an employé of the road, got "highfalutin" and went about with a horse and buggy, scarcely knowing whither he went. He meandered about until after dark, when he found himself on a crossing near the spot where the red-skin went up. The horse, having some notions of his own, had stopped with the buggy on the track and refused to go from there, although Cole, who had awakened to a sense of his danger, was earnestly persuading him to go. Along came the train and there was considerable buggy in the air; the horse walked off unharmed, and Cole quietly sat down beneath the head-light, whip in hand, and without a scratch. Gathering himself up, he walked over the running board to the cab window, which was hooked ajar, and went into the cab. The engineer was paralyzed with fear, and the train rushed on. He thought his Indian had come; but being acquainted with Cole he soon took in the situation, and Cole left the engine at the next station, thoroughly sobered and in good order. GAINES.

Mileage of 42-in. Wheels.

We have been shown detailed official reports of the mileage of 40 42-in. wheels, which were furnished by the Ramapo Wheel and Foundry Company, and put under five Pullman cars in August, 1876, and have been running since on the Atchison, Topeka & Santa Fe Railroad. The report covers the period up to the end of February last, when something more than half the wheels were still in use. Up to that time the forty wheels had run an aggregate of 4,101,762 miles, or an average of 102,544½ miles each, while the wheels still in use can be depended upon for a considerable increase to this, which will raise the average considerably. A letter from Mr. A. B. Fullman, second Vice-President of the Sleeping Car Company, certifies to the correctness of this performance, and says that there is no doubt that the service yet available from the wheels still in use will bring up their average to 125,000 miles each.

Notes.

A distinguished citizen of Connecticut is to show his agility as a passenger conductor on the New York, New Haven & Hartford road. He is no less a person than Mr. Patrick Murphy, who is President of the Fat Men's Association, and whose weight is to be counted by the ton rather than by the pound, like that of ordinary men. Fortunately, the bridges on the New Haven road are all sound.

An exchange gives detailed specifications of a new locomotive that is in process of building for the Louisville & Nashville road, including the extraordinary statement that it is to have "83 driving wheels!"

Some of the Boston & Albany folks are anxious to interview a man who was brought to the depot in Boston one day this week, apparently a cripple of the worst kind, and wanted to go to Springfield. As he lacked means, he was assisted by several prominent men and started off, but upon reaching West Warren he jumped off, found a friend, and walked away. The train men were naturally somewhat wrathful at seeing the man whom they had carried on board so tenderly skipping nimbly out of sight.—Springfield Republican.

"Beckwith!" shouted the brakeman on the B. & M. yesterday morning as the train slowed up at the first station west of Glendale, and a lipping passenger jumped up and ran out to get something to eat. He was mad when he came back. "Thith ith a nithe plathe to get bwecfath," he said. And then the congregation threw its hat on the floor of the car and stamped up and down on it, and yelled and roared and howled until Conductor Stanchfield came in and said he would close the services if the noise wasn't stopped.—Burlington Hawkeye.

Locomotives for Sale.

The Eastern Railroad Company offers for sale four locomotives, which are to be replaced by heavier engines. They are all of the eight-wheel American pattern, one 15 by 18 in. cylinders with 54 in. drivers, built by Taunton Locomotive Co.; one 14 by 22 in. cylinders with 51 in. drivers, built by Southern; one 14 by 20 in. cylinders with 60 in. drivers, and one 14 by 22 in. cylinders with 66 in. drivers, built by Portland Co. The officer to be addressed is H. H. Elliott, Purchasing Agent, Eastern Railroad, Boston, Mass.

Running Without a Truck.

A curious accident happened to the Truro freight train which arrived at Moncton station about 2 a. m. on Friday. Soon after entering the station yard, and at the first curve, the wheels of a coal-laden flat car near the locomotive left the rails and a halt became necessary. On examining the car which caused the trouble, the fact was revealed that the two pair of wheels at the "hind end" of the car had been traveling without any truck, further inquiry showing that portions of the truck were lying on the track near Dorchester station. It would seem as if a wheel of one of the "followers" had broken badly east of Dorchester, and that the pair then ceased to revolve, as a portion of each of the pair is worn flat by dragging along the rail for thirty miles or more. Railway men cannot recall a similar accident. They say that after the destruction of the truck, the weight of the car, and for that matter, most of the train, was sustained by the draw bar, and they think that, looking to what was accomplished on the way from Dorchester, there was no reason why, on a straight line, the car might not have been dragged thirty miles further, but it was the rounding of a sharp curve that prevented further dragging and threw both wheels and car off the track. The accident is voted one of the most extraordinary in railway experience.—Moncton (N. B.) Times.

We have heard of a similar case on the Erie some 15 years ago, when an engine ran into the Port Jervis yard with only one pair of wheels under the rear tender truck and the wheels and axle were found on the side of a bank several miles back.



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CONTENTS.

ILLUSTRATIONS:	Page.	GENERAL RAILROAD NEWS:	Page.
Royal Saloon Carriage.	133	Meetings and Announcements.	141
Point Bridge, Pittsburgh, Pa.	141	Elections and Appointments.	141
CONTRIBUTIONS:		Personal.	142
"Imperceptible Slip" of Driving Wheels.	134	Traffic and Earnings.	142
Spreading of Rails as a Cause of Accidents.	134	The Scrap Heap.	137
EDITORIALS:		Old and New Roads.	142
The United States Rolling Stock Company.	138	Transportation in Congress.	134
Running Gear of Cars.	138	General Passenger & Ticket Agents' Association.	135
Distribution of Winter Grain Receipts among Atlantic Ports.	139	The Windsor House Meeting on East-Bound Rates.	135
The Division of East-Bound Traffic.	140	ANNUAL REPORTS:	
Another Pacific Railroad Sinking-Fund Bill.	140	United States Rolling Stock Company.	136
The Winter Grain Movement.	140	MISCELLANEOUS:	
Record of New Railroad Construction.	140	American Exhibitors at the Paris Exposition.	136
EDITORIAL NOTES.	140	The Missouri Law Regulating Rates.	136

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE UNITED STATES ROLLING STOCK COMPANY.

The unique character (in this country) of the business of this company causes a greater interest in the accounts of its business given in its annual reports than its general importance warrants. Its business, too, is widely extended, so that a large number of railroad companies have direct dealings with it, and are likely to be curious as to the returns made by its peculiar business.

It is not, however, possible to judge from the experience of this company just what sort of a field there is for a car-loaning business, pure and simple, in this country. Unfortunately, as it has turned out, for this company, it was not organized for the purpose of supplying the ordinary demands of the whole country; but constructed its stock chiefly to suit the requirements, or what the requirements were expected to be, of one road, and that exceptional in its gauge and necessities. We say that the rolling stock was constructed to suit what the requirements were expected to be; for when the United States Rolling Stock Company made its original contract with the Atlantic & Great Western it was expected that the latter would soon change the gauge of its road from 6 ft. to the standard, and on this account all the locomotives of the rolling stock company were made of standard gauge, as well as part of the cars leased to the railroad company. The latter found use for some of these on its leased Cleveland & Mahoning road, but a very large part of the locomotives stood rusting on its side tracks for a long time after they were delivered. As the original contract with the Atlantic Company was not carried out, it was fortunate that so much of the equipment was made unfitted for it in gauge; but this whole transaction, however well it may have fitted the rolling stock company's equipment for the wants of the

Atlantic & Great Western, effectually prevented the provision of it in accordance with the general requirements of the country. For this reason, we say, the results of the United States Rolling Stock Company's business cannot be taken as a criterion of the business of car-loaning generally. The \$5,000,000 of its capital was largely spent for rolling stock of a kind for which there is no or very little general demand.

At the close of last year, for instance, we find that one-half of its locomotives and three-eighths of its passenger cars and nearly one-half of its baggage cars were lying idle. Stock of this kind, it appears, is very hard to rent. But for the contract with the Atlantic Company, probably the rolling stock company would never have purchased such equipment, but limited its stock to freight cars, for which there seems to be a pretty wide market and a tolerable demand, as might have been anticipated from the experience of car-loaning companies in other countries. About one-fourth of the total capital of this company, we believe, was expended for locomotives; and the gross receipts for their rentals last year were not more than 6 per cent. on this cost.

And this suggests another reason why the income returned on the capital of this company does not indicate the possible rate of profits of ordinary car-loaning business. Its rolling stock was bought about 1872, when prices had reached their highest point. The locomotives which it paid \$12,500 for can now be had, probably, for \$7,500 from the same makers. Box cars were charged in its account at \$880 each, though bought at once by the hundreds, and can now be replaced at about \$450. And so generally. The \$5,000,000 which it spent for cars and locomotives went no further than \$3,000,000 would go now, and the $4\frac{1}{2}$ per cent. which it has divided for the past two years on its capital stock is equivalent to $7\frac{1}{2}$ per cent. on the present money value of the property bought with that capital.

Further still: this company provided its equipment when business was at the high tide of prosperity. The established railroads saw their business growing by leaps and bounds; the business, too, was very profitable; it was easy for them to get capital, and they very generally took the opportunity to provide themselves not only with equipment enough for their immediate requirements, but also to supply the demands of the great yearly increase which experience had taught them to expect and prudence seemed to require them to provide for. It is needless to say that the collapse came and the rapid growth of business and traffic ceased. Very generally the railroads were left with more equipment than they needed, with cars and sometimes locomotives which they were glad to loan to any road poorly provided with equipment. That is, by the time the United States Rolling Stock Company got fairly to work the condition of railroad business was in an abnormal condition, with facilities exceeding the requirements of traffic. So far as freight equipment is concerned, probably a change has already taken place, and there is now no overstock of this kind of rolling stock. But even with increasing business, the tendency has been to use fewer and fewer locomotives, partly by hauling heavier loads, and partly by running the engines more hours in the day or more days in the year. Moreover, to a great extent the new demand for locomotives has been for engines of greater weight and power than those bought in 1872 by the United States Rolling Stock Company.

On the whole, then, considering the fact that a large part in value of the equipment of this company is of kinds not in demand for hire; that the cost of such equipment is now about 40 per cent. lower than when it purchased; and that the times have been such as to make the demand for rolling stock abnormally small—considering these facts, the return of an income of $4\frac{1}{2}$ per cent. on the capital expended seems to be a quite satisfactory result.

It is the more so because the utmost pains seems to have been taken by the management to pursue a conservative policy with regard to a reserve for renewals. When this company began its career, it seems to have assumed that its total earnings, aside from the trifling expenses for collecting and general office, could be divided—that is, that its property would last forever without expenditures for repairs and renewals on its part. Under its present management, however, very careful provision has been made, by providing shops for construction and repairs and an adequate reserve fund, to guarantee the complete maintenance of the property represented by the company's capital. This reserve already amounts to more than one-tenth of the company's construction account, besides a much larger amount which is in litigation and may not be collected. Last year but little more than two-thirds of the net earnings was divided; the rest went to the reserve.

With the increase of the number of customers of the

company and the larger field over which its rolling stock is scattered, its expenses become a material part of its receipts—last year no less than 39 per cent.—instead of the inconsiderable amount that was estimated when the company was organized, and when it seems to have been expected that it would have no further trouble with its property than to take in the money which it should earn. Last year the direct expenditures for repairs of its rolling stock were about 2 per cent. on its original cost and $3\frac{1}{2}$ per cent. on its present value. Freights, taxes and insurance, and general expenses, go to swell the account, a large part of these being justly chargeable to repairs.

The report for 1877 shows a large falling-off in the receipts for rentals of cars leased at time rentals, and an enormous increase in the receipts from cars let at a mileage rental. This latter practice, then, seems to have come generally into vogue within the year. This would seem to be an unfavorable basis of rental for the lessor, as the lessee pays only for the cars while running, and has no motive for keeping them busy when there is no pressure of traffic, but the contrary if he owns any rolling stock of his own. In times like these, when freight is sometimes taken at 3 cents per car-load per mile, it is easy to understand that the carrier may object to paying more than $\frac{3}{4}$ cent for the use of the car while it is actually moving.

This company's experience has taught it what kinds of rolling stock there is a demand for. We have seen that its locomotives and passenger-train cars are to a great extent unemployed, while its freight cars are mostly engaged. Indications of the relative demand for different classes of the latter may be found from the fact that last year the company added refrigerator and gondola cars to its stock, while at the same time transforming box and stock cars into refrigerators and dump cars into gondolas. Refrigerator cars it had its first experience with last year, and it seems to find a good market for them.

With the experience now gained, we may expect the company to be reasonably prosperous in its future ventures. In course of time the present unrentable stock can doubtless be disposed of, and the whole capital of the company will be invested in those kinds of cars for which there is a fair market. The varying necessities of railroad companies, and the demands of many classes of traders who need the use of cars for considerable periods, but do not wish to invest their capital in them, will always find employment for a reserve stock of cars which can be distributed throughout the country as circumstances require.

THE RUNNING GEAR OF CARS.

It is a curious fact, that while nearly all mechanical locomotion is effected by some rolling movement, there is no analogy in nature to suggest such an expedient, and therefore the inventor of cart wheels has been pronounced the greatest of all inventors.

The simple rolling of one cylindrical or circular body on a surface presents many curious problems, some of them requiring the most abstruse mathematics for their solution. Without referring to these, one interesting one may be mentioned which has, we believe, been referred to in these pages before. A few years ago some one propounded in the *Scientific American* the inquiry whether if one circle, like a toothed wheel, or say a silver dollar with milled edges, revolves around another one of equal size which is fixed—the two edges rolling against each other without slipping, as would be the case with toothed wheels—does the outer wheel make one or two revolutions around its centre or axis? The problem attracted the attention of all classes of men, mechanics, professors and young and old, and many pages of discussion was published in the paper referred to by the contending single and double revolutionists. To this day almost any company of a half-dozen people may be arranged into two hostile parties by suggesting the enigma. This has been mentioned to illustrate how difficult it is to comprehend some very simple phenomena of rolling motion, even when no question of abstruse mathematics is involved. What is curious, too, is that there is no part of the science or art of railroad operation that is so imperfectly understood as that of the rolling of the wheels, especially on a curved track. Comparatively few practical railroad men have any clear idea of the way in which a car truck moves around a curve, and of the effect of the wheels and their flanges on the rails or *vice versa*. This action is in fact more complex than may at first appear. One of the first object lessons which most of us learn, even before we attempt erect locomotion, is the rolling of a spool, on which ordinary sewing thread has been wound, on the floor. Such a spool, which may be represented by a letter I laid on its side (thus I—), will roll in a straight line. If, however, one end of the spool is reduced in diameter, as shown by the following letter

the type for which has been filed off slightly at one end, it will roll in a circle as freely as the first one rolls in a straight line. The radius of the circle in which it will roll will depend upon the relative diameters of the two ends and the length of the spool. Another illustration of this principle is the rolling of a barrel on a pair of "skids," which are often used in unloading wagons and cars. The skids consist of two wooden rails, on which the barrel rests, and on which it will roll as easily in a curved as in a straight path, because in the former case the barrel will at first roll toward the outside of the curve, and, therefore, its diameter at the point of contact with the outer rail of the skid will be greater than that where it touches the inner one, and, therefore, in rolling it would move in a path similar to that in which our conical spool or any other cone would. In the case of the barrel, however, it will adjust itself to curves of any radius, within certain limits, because it will always roll toward one side until the difference in the diameters at the points of contact will cause it to roll in the path described by the track, whether that be straight or more or less curved. Therefore, this principle of a double cone has been very generally applied to car wheels, because it was supposed that if made of this form they would adjust themselves to any curve or to a straight track if required. The radius of the circle in which any cone similar to that represented by our mutilated π will roll may be calculated by multiplying the diameter of the large end by the length of the cone, and dividing the product by the difference of the diameters of the two ends, or, conversely, we may find the required difference of diameter in order that a cone may roll in any circle by multiplying the diameter of the large end by the length, and dividing by the radius of the circle. Thus to find the required difference in diameter of the inner wheel, if the outer one is 33 in. in diameter and the gauge 4 ft. 8½ in., so that they will roll in a curve of 600 feet radius, we have

$$\frac{33 \times 56.5}{7,200} = 0.25$$

In other words, there must be a difference of one quarter of an inch in the diameters of a pair of 33 in. car wheels of 4 ft. 8½ in. gauge, in order that they may roll freely in a circle of 600 ft. radius. In the case of the barrel it is free to move laterally until it adjusts itself to its proper diameters for the curve on which it rolls. In the case of car wheels this supposed freedom of movement is also allowed by giving end-play between the flanges of the wheels and the rails. This, it will be seen, however, is usually quite insufficient to enable the wheels to adjust themselves properly to short curves. An amount of "coning" of ¼ in. to 1 in. of length of the tread of a wheel would be quite large. Now, in order to make a difference of ¼ in. in the diameters in contact with the rail, it would be necessary that the wheels should move an inch laterally, so that the point of contact of the outer wheel would be ¼ in. larger and the inner one ¼ in. smaller in diameter. So much lateral movement is, however, never allowed in practice, and wheels rarely have more than ⅜ in. clearance between the flanges of the wheels and the rails, and for this reason it is difficult to make the coning of car wheels effectual in causing them to roll in a curved path, even if it were not true that the cone is soon worn away in actual use.

There is, however, still another practical difficulty in the way of making the coning of the wheels effectual. They are, in nearly all cases, attached to cars or to car trucks in two or three pairs with their axles held in a position so as to be parallel to each other. Now, while it is true that a single cone will roll in a curved path as freely as in a straight line, such will not be the case if two or more cones are attached to a frame and held so that their axes are parallel to each other, as is the case with car wheels. If the cones are arranged so that their axes will each assume a radial position to the curved path in which they are intended to roll, then they will move in such a path as easily as so many cylindrical wheels would move in a straight line; but in order to gain the advantage of the conicity of the wheels it is necessary that their axes be able to assume a radial position to the curve and also that the wheels shall have enough end play to permit the cones to adjust themselves to the proper diameters. Neither of these conditions exists in ordinary practice.

It is not surprising, therefore, that this subject has attracted the attention of engineers and inventors, and many efforts have been made to construct the running gear of cars in such a way that the axles will assume radial positions to the curves on which they run, and on another page will be found a plan recently proposed and put in practice in England by Mr. Cleminson, to effect this purpose. That such an arrangement would be desirable, there can be no doubt, pro-

vided, in accomplishing it, greater evils are not incurred than these which it is sought to cure. We are inclined to believe that in many cases the evil of not having the axles radial is very much exaggerated, and that the theoretical defects of the running gear of cars have been hastily made the measure of the practical evils resulting therefrom.

In running around a curve, the wheels, with the ordinary running gear of "bogie" cars, as our English friends call them, must be made to slip in two ways—first, the wheels on one side must slip because the inner and the outer rails are of unequal lengths, and, second, they must slip sideways owing to the lateral deflection of the curve. The resistance due to the first, as has been pointed out in these pages before, is less than is usually supposed. Thus in passing around a curve forming a complete circle of any radius, the difference between the lengths of the inner and outer rails is equal to a circumference whose diameter is the gauge. The distance slipped on a complete circle of any radius is always the same with any given gauge. If the latter is 4 ft. 8½ in., the distance slipped is nearly 30 feet. The resistance to slipping may be taken at one-fourth the load. It must be remembered, though, that only one of the wheels must slip, and therefore in calculating the resistance due to this cause that it must be estimated for only one-half the weight on the wheels. For each ton of 2,000 lbs., then, the total amount of work done in overcoming the slipping would be equal to $29.02 \times \frac{1}{4} \times 30 = 7,500$ foot-pounds.

As the length of the circumference of a circle of 600 feet radius is 3,770 feet, if we divide 7,500 by that length it will give the resistance in pounds per ton due to the slipping of the wheels. This is nearly two pounds per ton, or only equal to that due to a grade of about six feet per mile. The lateral slipping of the wheels in proportion to their forward movement is in the same ratio as the angle of the wheels to the rails is to 90 degrees. The following are the calculated angles of the wheels to the rails of a curve of 600 feet radius for different lengths of wheel-base:

Wheel-base,	4 feet long.	12 minutes.
" " 6 " "	" " " "	17 " "
" " 8 " "	" " " "	23 " "
" " 10 " "	" " " "	29 " "
" " 12 " "	" " " "	35 " "
" " 14 " "	" " " "	40 " "
" " 16 " "	" " " "	46 " "
" " 18 " "	" " " "	52 " "
" " 20 " "	" " " "	57 " "
" " 22 " "	" " " "	63 " "
" " 24 " "	" " " "	69 " "

The lateral slipping of the wheels on a curve of 600 feet radius, with a wheel-base six feet long, will therefore be $\frac{1}{16}$ in., or about three-tenths of one per cent., and therefore in going around the complete circle the lateral slipping would amount to about 11.3 feet and the work consumed thereby would be per ton $11.3 \times 500 = 5,650$ foot-pounds, which divided by the whole length of the curve or 3,770 feet will give the resistance per ton due to this cause. This will be only about 1.5 pounds, or that due to a grade of about 4 feet per mile.

A great deal has been said, too, about the pressure of the flanges of the wheels against the outer rails. This is much less than is ordinarily supposed, and is in proportion to the sine of the angle of the wheels to the rails to the radius. Thus with a 6-foot wheel-base the angle of the wheels to the rails on a curve of 600-ft. radius is 17 minutes, and the sine of this angle is 0.005, so that if a car is pushed forward with a force equal to 12 pounds per ton the lateral pressure exerted by the flange of the front wheel would be $12 \times 0.005 = 0.06$ lb. for each ton of weight on the truck. If the weight of the car is ten tons on each truck, the pressure against the flange will be 0.6 of a pound—a pressure very much less than the lateral pressure is ordinarily supposed to be. In fact, with any such wheel-base as is usually employed the flanges are so nearly parallel to the curves that are in actual use on the main lines of our railroads that the difference on them and on a straight line is hardly appreciable. Thus in the last case named the inclination would be represented by that of two lines ten feet long in contact at one end and separated ½ of one inch at the other.

For these reasons it is thought that inventors of loose wheels and radial devices like that of Mr. Cleminson have been inclined to exaggerate the evils attending the use of the ordinary trucks employed under American cars. It is true that wheels loose on the axles, as proposed by *The Engineer* and some hundreds of inventors here, would overcome what may be called the circumferential slipping of wheels. In point of fact, however, this in practice is so very slight that it is not worth considering. The arrangement which Mr. Cleminson has worked out so ingeniously no doubt will adjust the axles on curves to turn radial positions, but the absence of this geometric precision is, with

ordinary trucks, not a difficulty of any practical importance. It is true that the axles of our four and six-wheeled trucks do not adjust themselves so as to be exactly radial to the curves, but then it makes very little if any practical difference if they are not. Our purpose is not to depreciate Mr. Cleminson's plan, which is reported to work very satisfactorily, but to defend the "bogie" truck against some assumed objectionable features which do not exist.

Distribution of Winter Grain Receipts Among Atlantic Ports.

For the past two or three years until this winter a great deal has been said of the diversion of grain traffic from New York to Philadelphia and Baltimore; this winter there has been apparently little curiosity on this subject, although the grain traffic was never so great and important before at this season of the year. Perhaps this is really the reason why little attention is paid to the business of different places. Every city has an unprecedentedly large business, and when people have all they can attend to they do not much care how much their rivals get. If they get but little to do they will sometimes grumble if their rivals get anything. This winter every leading grain port has been able to show a large increase in its grain business when compared with last winter. Baltimore has been able to rejoice because its receipts were greater by 17 per cent., and has been too much occupied to complain that meanwhile Philadelphia's increase has been 84 per cent., and New York's 130 per cent. Almost the only exception has been that some interest has been excited by an increase of 270 per cent. in New Orleans receipts.

The receipts of grain of all kinds at each of the seven Atlantic ports for the three winter months, that is from Dec. 1, to March 2, have been as follows for the two years past:

	1877-78.	Per cent. of total.	1876-77.	Per cent. of total.
New York.....	17,872,293	41.2	7,780,902	31.4
Boston.....	3,365,793	7.8	3,377,404	13.6
Portland.....	935,900	2.2	464,109	1.9
Montreal.....	51,055	0.1	70,215	0.3
Philadelphia.....	8,116,410	18.7	4,420,300	17.9
Baltimore.....	8,790,500	20.2	7,490,944	30.2
New Orleans.....	4,200,477	9.8	1,156,983	4.7
Total.....	43,392,488	100.0	24,775,817	100.0

Very great changes between the receipts of this year and those of last are shown at different places, such as might, at first sight, be looked upon as indications of radical changes in the channels of traffic. But we should consider, in the first place, the changed conditions of the trade as a whole; first, that it is about 80 per cent. greater this winter than last; second, that the increase in total and especially in wheat receipts has been much greater in proportion than the increase in corn receipts, and, third, that no considerable diversion of wheat has ever been made from New York. Of the total increase of about 18,600,000 bushels this winter, some 12,500,000 bushels has been in wheat, so that New York's increase in the proportion of its receipts is natural under the circumstances.

The decrease at Baltimore (in proportion—in quantity it shows an increase of 17 per cent.) is just about equal to the increase at New York, and the decrease at Boston just about equal to the increase at New Orleans, but they probably had no very close connection with each other, except that the New Orleans business, like the Baltimore business, is chiefly in corn, and is drawn largely from the Ohio valley and the country further west in about the same latitude, which also supplies Baltimore with a very large proportion of its grain receipts. Though that city has a connection to Chicago, worked directly in its interest, the shipments from Chicago by that road were but 1,850,000 bushels in the whole year 1877, while the total receipts of Baltimore in the month of December alone were 3,200,000 bushels.

The proportion of the total received at New York and that at Philadelphia and Boston were:

	1877-78.	1876-77.
New York.....	41.2	31.4
Philadelphia and Baltimore.....	38.9	48.1

This is the proper comparison to make of exporting cities, Philadelphia and Baltimore being the only considerable rivals of New York for the export of grain during the winter, when Montreal is not of the field. So far as the railroads are concerned, however, we will do better to put New York and Boston together, as the New York Central & Hudson River, the chief carrier of grain to New York, is also the chief carrier to Boston. This comparison shows the following per centages for the two years:

	1877-78.	1876-77.
New York and Boston.....	49.0	45.0
Philadelphia and Baltimore.....	38.9	48.1

This does not show so great a gain in favor of the more northerly roads. Roughly speaking, we may say that the share of the grain trade which Philadelphia and Baltimore have lost this winter as compared with last winter has gone, a little less than half of it to New Orleans and the rest further north.

Much has been said this winter of the great increase of grain receipts at New Orleans. In proportion, this increase is certainly very large, but in amount it is not considerable, compared with the business of other leading ports. Its importance, however, is as an indication of a possible future growth of exports by that port. We understand that the business this winter has been largely created by the exertions of a company of merchants and shippers who are interested in developing commerce by this route and have purchased the grain that they have shipped and exported it on their own account. This is likely to secure thus early a fair trial of the route, which might not otherwise be had for some time; but until the results are known we will not be able to judge of the advantages of the route by the amount of the shipments. The receipts at New Orleans this winter have fluctuated greatly, the greatest for any week having been 735,000 bushels, for the week ending Feb. 9, and the smallest being 76,500 bushels, for the week ending March 2, the average being 327,730 bushels. Rates from New Orleans to Europe are much higher than from New York on cotton, but grain makes an advantageous freight to complete the cargoes of vessels whose chief cargo is cotton; and until the stock offered for export exceeds the requirements for this purpose, the vessels can afford to take grain thence at less than the corresponding cotton rate.

But the chief change in the business of the three months reviewed is, first, the large total gain, the winter's business having been by far the largest on record; and second, the great gain at New York, which we attribute chiefly, if not wholly, to the preponderance of wheat in the receipts. As to the relation of the total movement to that of previous years, it is shown by the figures in another article entitled "The Winter Grain Movement," which show the total receipts of grain of all kinds at the seven Atlantic ports, for the three months of December, January and February, for the past winter, were 71 per cent. greater than in any previous year.

The Division of East-Bound Traffic.

The condition of east-bound traffic since last fall is a striking commentary on the ineffectiveness of any ordinary agreement, or of the common interests of the railroads, or of an abundant traffic, to maintain rates, when traffic is freely competed for by a large number of railroads. The summer passed quite peacefully, though in the earlier part of it traffic was very light and the water competition the severest ever known. While navigation was open in the fall there was an enormous traffic in grain, which the roads not carrying to the lakes got but a small share of; and yet rates were well maintained. But danger was anticipated long before it came. Experience had shown that almost the only thing certain about railroad rates was the difficulty of maintaining them. So as early as October the railroad managers began to take precautions against the anticipated troubles. They not only met and agreed what rates should be for the time, and pledged themselves to maintain them, but they endeavored to contrive some penalty for the violation of their pledge. All seemed equally in earnest about this, as all had good reason to be in earnest. There was promise of an exceptionally large winter traffic under circumstances which would make it possible to collect remunerative prices for carrying it; and their companies, most of them, were sadly in need of some profits. They certainly could have no motive for throwing away profits.

Yet this is just what they have been doing nearly ever since navigation closed, surely without any desire to do it and without any intention of doing it, and without anything in the circumstances of the traffic itself which compelled them to do it; it has been simply a result, apparently unavoidable, of the unchecked competition of a large number of carriers for a traffic which does not fully occupy them, but which would not fully occupy two roads or a single road either, if it was confined to it, instead of being carried by a score or more. The nature of the railroad as an instrument of transportation is such, as we have heretofore endeavored to show, that it always is, or can easily be made to be, capable of carrying a great deal more traffic than it can get, and this always makes it advantageous for one to secure any clear addition to its business which pays the least trifle over the cost of doing it, and leads the agents of the roads to try to secure such additions by diverting business from their rivals.

Apparently no remedy for this undue reduction of rates on competitive traffic can be had, so long as any motive is left for diverting traffic from one road to another. Perhaps no more serious effort was made to apply one than this of last winter by the managers of the lines between the West and the East. Yet rates were never more demoralized; and a considerable part of the business of the winter has been done at a positive loss.

It is not strange, then, that the meeting at the Windsor House last week decided unanimously that to keep up rates it will be necessary to take away the motive for cutting rates, and accepted the policy which Mr. Fink has so long preached, to divide the business of competitive points by agreement or arbitration.

It has long seemed probable that this would be the final result of the negotiations concerning east-bound traffic, as it

has been with west-bound traffic. But few anticipated a resort to it so soon. And very likely it would not have been consented to had it not been for the complete and disastrous failure of the other agreements made concerning this traffic recently and the absurdly low rates to which freights had been reduced. When freight was taken 1,100 miles at 10 cents per 100 lbs., managers were ready to take extraordinary measures to bring about a change.

And perhaps even the desperate condition of things would not have brought every manager at the Windsor House meeting to consent to an apportionment, had not Mr. Hurlbut proposed to make it temporary. Certainly it could hardly be expected that a score of more companies should agree upon a permanent limitation of their traffic without a long and careful study, to ascertain what they could justly claim or abandon. But when the proposition was made last week, it was evident to every one that no danger would be run by consenting to an apportionment for three months. No share given by an arbitrator at maintained rates could fail to yield more than the largest share of the traffic at the current rates, without such a distribution. Indeed, there was little prospect that there would be any profit on competitive traffic for the next three months unless harmony should be secured in some way.

Not all the parties who will be affected by the proposed apportionment were present at the meeting last week, and it will be necessary to secure the consent of these or some of them; but this will not necessarily cause delay. The apportionment is to date from March 11, when rates were restored, though the proportions are not yet fixed and cannot be for some time. Each road will be given its share from that date, whatever that share may be decided to be, so that none will have any profit from any extraordinary business which it may secure before the amount of its share is announced. If it has had more than its share when that announcement is made, it will have just so much less afterward.

There are some difficulties in the way of this plan, aside from the dispositions of the companies—that is, in the character of the traffic itself; it is a very complicated business, and will require great care and much thought to adjust properly and effectively. The latest news from the Northwest shows that some delicate negotiations will have to be effected between three or four of the companies interested in the business of one of the cities before they will accept the plan. It must not be looked upon, therefore, as an accomplished fact, but rather as a project strongly urged by most of those interested, including most of those who have hitherto opposed it.

Another Pacific Railroad Sinking-Fund Bill.

There seems to be some competition among the Senate committees in the matter of proposing plans for the extinguishment of the Pacific railroads' debts to the government. We recently noted the bill submitted by the Senate Judiciary Committee, which provides for a large increase in the annual payments by the companies; and now we have a plan from the Senate Committee on Railroads, which might properly be termed a bill for the relief of the Pacific railroads, as by its provisions the payments would be much easier than under the existing law. Briefly, it provides that the Central Pacific and the Union Pacific shall each pay a million dollars yearly into a sinking fund, on which 6 per cent. interest shall be allowed, and this shall accumulate until 1900, which is shortly after the principal and accumulated interest on the bonds will be due. The amount then will, it is calculated, pay off the accumulated interest and about four millions of the principal, leaving about \$51,000,000 of the principal (from the two companies) unpaid. This is to be paid in half-yearly installments thereafter with interest at the rate then paid by the United States on the larger part of its public debt on the 1st of January preceding the payment of each installment; but the interest is not to be paid semi-annually on the whole debt to the government outstanding, but only the interest on the installment of principal then paid, from 1900 to the date of payment. Thus, supposing the debt to be \$51,000,000 on the first of October, 1900, and the rate of interest paid by the government the following first of January on most of its debt to be 4 per cent., the Pacific railroads would have to pay April 1, 1901, when the first installment of principal became due—

One-fiftieth of principal.....\$1,020,000
Six months' interest on same at 4 per cent.....20,400

Total payment.....\$1,040,400

While if the interest was paid as it accrued the payment would be—

One-fiftieth of principal.....\$1,020,000
Six months' interest on whole debt at 4 per cent.....1,020,000

Total payment.....\$2,040,000

That is, by this arrangement, the companies are to pay the interest only when the principal becomes due, and get the benefit of interest on the enormous amount of accumulated interest. Thus the interest on the last installment of \$1,020,000 would be just equal to the principal, and the companies would have had the free use of this sum on an average 12½ years after it had accrued; and so, only for shorter periods and smaller amounts, with the interest on all the other installments.

This payment of a million dollars a year by each company is to be a substitute not only for the 5 per cent. of net earnings but also for the one-half of the earnings from Government transportation required by the present law. And this is the more in favor of the companies because the latter amount now goes toward meeting the current interest, and not, like the proposed payment of a million yearly, into a sinking fund increasing yearly by compound interest to pay a debt formed chiefly of interest which is not compounded. This arrangement, as well as that for the postponement of

interest payments after 1900, would be purely a favor to the railroad companies and would amount in the aggregate to some millions of dollars. In 1876 the half earnings from government business on the Union Pacific were \$586,000, all of which was applied to the payment of interest accruing during the year. By the Railroad Committee's bill this would go into the sinking fund, and by 1900 would increase so as to pay off more than \$2,400,000 of interest.

It is in this way, by giving the companies compound interest for a series of years on sums paid to the government, and requiring from them only simple interest payable at the end of long periods, that the way of payment is made easy to the companies by this bill. It is as if one should borrow a thousand dollars at 6 per cent., payable with accumulated interest not compounded in twenty-five years. Then when the debt is due he will have to pay

Principal.....\$1,000
25 years' interest at 6 per cent.....1,500
Total.....\$2,500

But the borrower lends this money at 6 per cent., payable half-yearly, and reinvests the interest, that is, he forms a sinking fund with it, which at the end of 25 years amounts to \$4,383, so that he pays the debt with the money he borrowed and has \$1,883 left.

In the case of the Pacific railroads as proposed by the Senate Committee on Railroads, it is proposed to have the party who loans at simple interest borrow the same money at compound interest, and for part of the time at a higher rate. This ought to be satisfactory to the railroad companies, and probably will be.

The application of this law to the Union Pacific for the business of 1877 would have left it, after paying all charges for interest, a surplus of more than \$2,900,000, or very nearly the actual amount required to pay the 8 per cent. dividends.

The Winter Grain Movement.

The movement of grain of all kinds for the three months from Dec. 1 to March 2 has been as follows for the past five years:

Receipts of the eight leading Northwestern grain markets (St. Louis, Peoria, Chicago, Milwaukee, Duluth, Detroit, Toledo and Cleveland) have been, in bushels:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
33,280,272	28,337,187	31,594,380	20,242,864	35,098,009

The shipments of the same Northwestern markets have been:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
21,570,938	13,404,025	15,138,535	9,452,738	15,494,690

The receipts at the seven Atlantic ports (Montreal, Portland, Boston, New York, Philadelphia, Baltimore and New Orleans) meanwhile were as follows:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
43,392,088	24,546,697	22,550,005	19,524,658	25,339,321

The receipts at Northwestern markets were thus about 18 per cent. greater this winter than last, but about 5½ per cent. less than in the winter of 1873-74, when they were greater than ever before, and when a much smaller proportion than now went through without transfer at one of the Northwestern markets.

The shipments from Northwestern markets were not only 60 per cent. greater than last winter, but even 39 per cent. greater than in the winter of 1873-74.

The receipts at the Atlantic ports have this winter been 75 per cent. greater than last winter, and 71 per cent. greater than in the winter of 1873-74.

Notwithstanding the enormous and unprecedented total movement shown above, a great many lines complain that their traffic has been bad, and greatly limited by the mildness of the winter, which has kept the country roads impassable, and prevented the marketing of a great deal of grain that otherwise would have come forward. This is especially the case on some roads in Illinois, where a great corn crop has been harvested and very little has been marketed. An inspection of the table of receipts and shipments of flour, wheat and corn separately, for the first two months of this year, given under the head of "Traffic and Earnings," will show that the largest part of the great increase in total grain movement this year has been in wheat. While the Northwestern receipts of all grains have been 33 per cent. greater than last year, the Northwestern corn receipts have been 21 per cent. less. The great bulk of the wheat business is done over roads west and north of Chicago, and it is easy to see that while some roads have had an overwhelmingly large grain traffic, as many, and perhaps more, may have had no increase of business over the unsatisfactory movement of last winter, though the increase of 29½ per cent. in the receipts of corn at Atlantic ports show that there has been somewhere an active movement in this grain, though not comparable to that in wheat, which is more than eight times as great as last year for the same two months.

Record of New Railroad Construction.

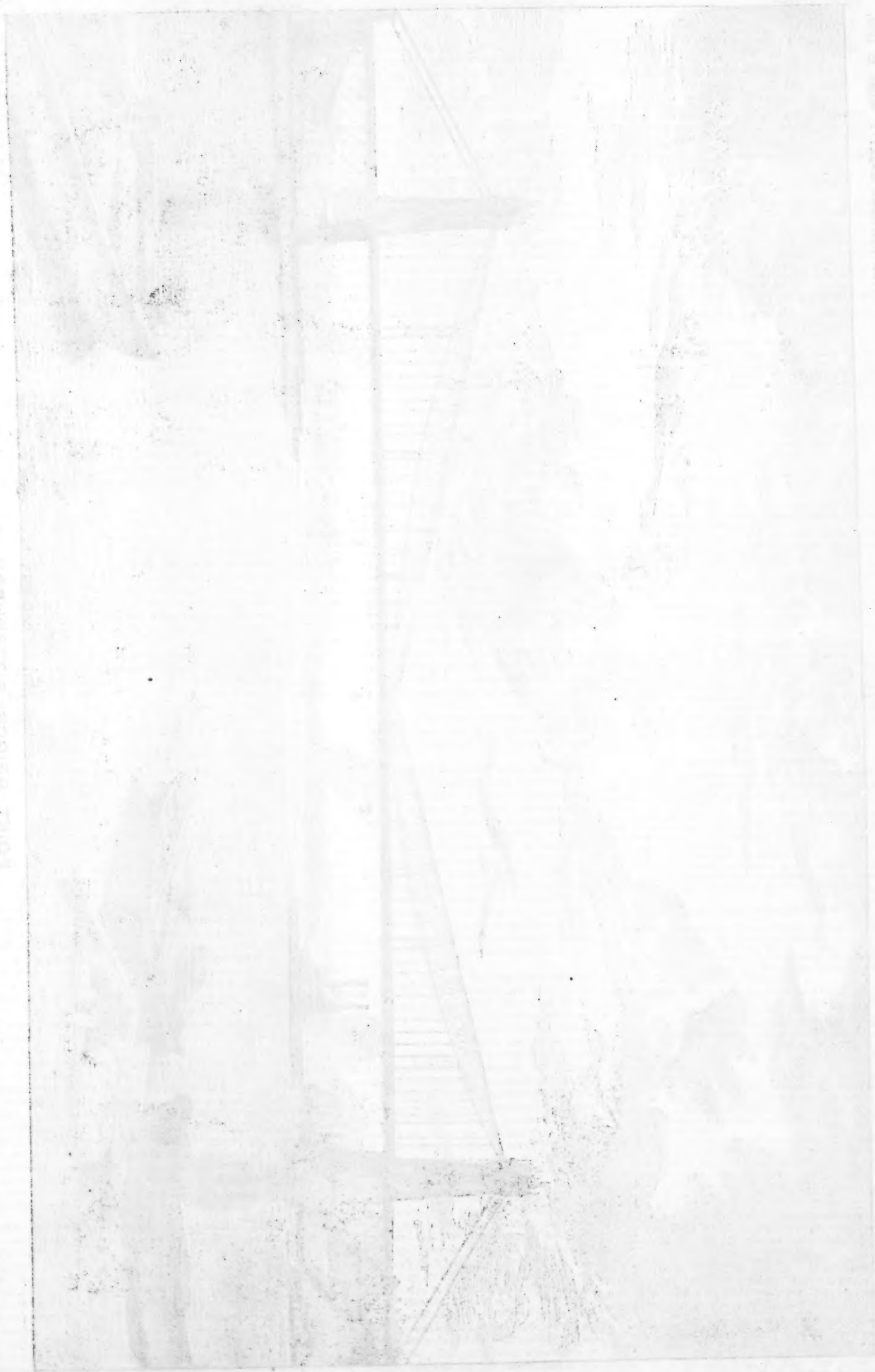
This number of the *Railroad Gazette* contains information of the laying of track on new railroads, as follows:

Galena & Southern Wisconsin.—Extended from Platteville, Wis., to McCormack's, eight miles. It is of 8 ft. gauge.

Toledo & Ann Arbor.—The first track is laid from Dundee, Mich., north to the Macon River, 8 miles. It is of 8 ft. gauge.

This is a total of 11 miles of new railroad.

THE NEW YORK APPORTIONMENT, it may be worth while to say, is working smoothly, in spite of reports to the contrary. The traffic offered to the several companies is not quite the same as the proportions offered them, but the differences are not so great as they were at first, and not very great at most. One company is said to have about 40 per cent. of the total offered it by shippers, instead of the

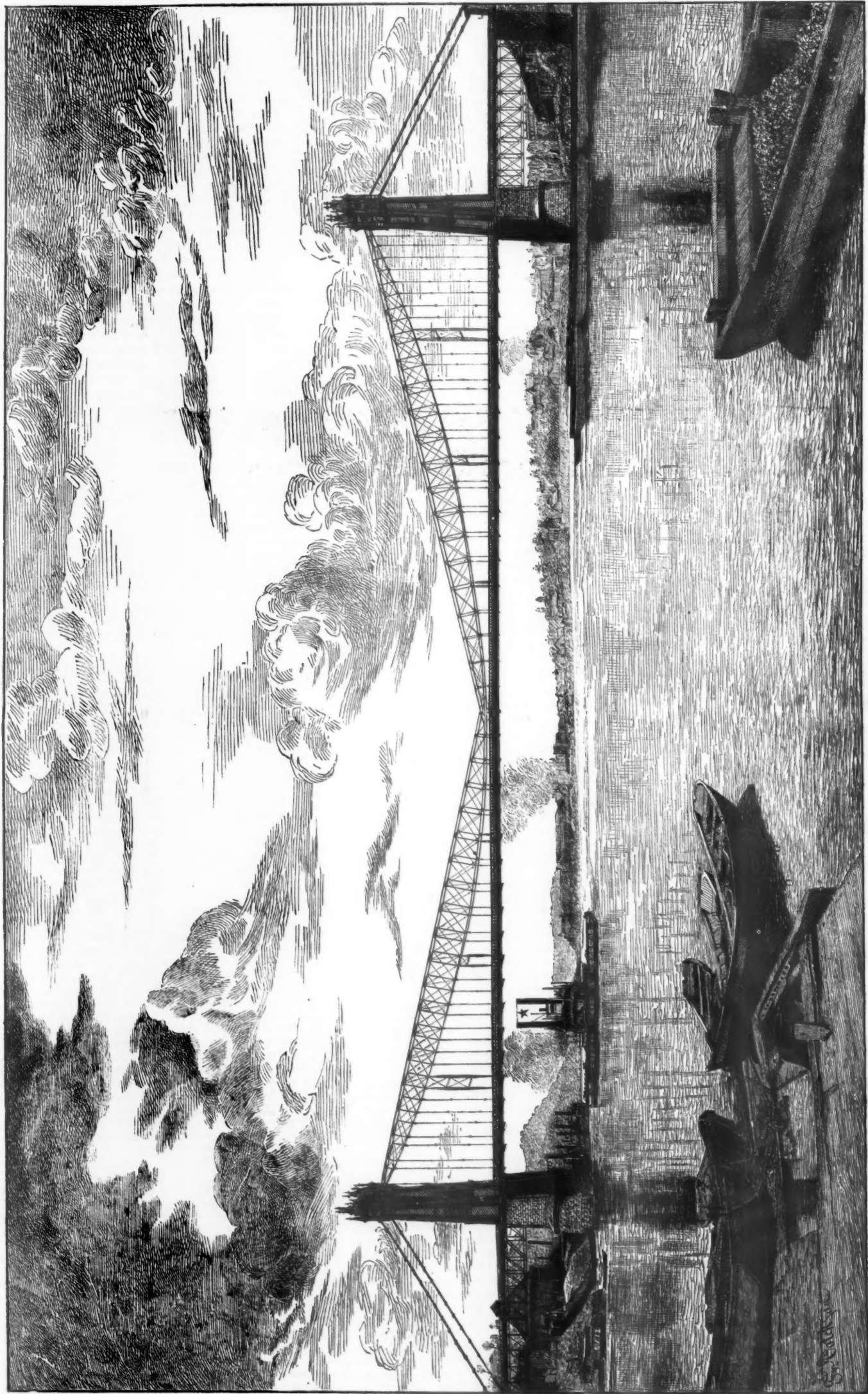


THE ARCHITECTURE OF THE

THE ARCHITECTURE OF THE

Fig. 1.

THE RAILROAD GAZETTE, March 15 1878.



POINT BRIDGE, PITTSBURGH, PA.,
Designed by Edward Hemberle, Engineer; Built by The American Bridge Company, Chicago, Ill.

83 per cent. allotted it and which is all that it is permitted to take; one gets just about the proportion allotted it; one company is about as much behind as the first is ahead, and a fourth pretty nearly secures its proportion without calling upon other companies for transfers, but not quite. There is a clearing weekly, except when the balances to be transferred are inconsiderable, and the transfers to make the proportions right are actually made, no company having at any time an overplus greater than about one day's business by all the lines. The shipments are quite moderate for the season, and have not increased at all since the reduction in rates was made. Records of the Boston and other New England business now divided between the Boston & Albany, the Hoosac Tunnel and the Grand Trunk routes are now kept at the office of the New York Commissioner; they are said to show that this business is about one-fourth as great as the New York business which is divided. The Grand Trunk at the lower rates permitted it provisionally, pending arbitration, is said to secure about one-fifth of the business, which is a mean between what it claimed and what its rivals offered it. Perhaps one or two of the roads at New York or Boston could get a little more of the traffic than is now allotted them if they were free to compete for it; but it would be next to impossible for any to make so much money by it, and probably the west-bound business of New York for the year ending July, in spite of a light business and low rates, has not been so profitable for years; while the shippers have had scarcely anything to complain of, except what was caused by not including the Boston business in the apportionment from the first. The fact is, heretofore for a very large part of the time the railroads have made nothing on west-bound business, and thus there has been room for them to increase their profits greatly while still charging very moderate prices.

WESTERN IMMIGRATION has set in this winter in a way that recalls the palmy days of 1867-69, when the railroads to Kansas and other border states had a passenger traffic that resembled that of Eastern trunk lines, and west-bound business was much larger than east-bound, where ordinarily the east-bound is two or three times as great as the west-bound. Now the rush is said to be chiefly to Kansas and Minnesota, where there is still room for several hundred thousands of settlers, though the states between these two doubtless share in the movement. A great many of the railroads profit doubly by this immigration, first by carrying the immigrants and their household stuff, and second by selling them land. In Minnesota the sales of land have been very much greater than for years before. The grasshoppers have frightened settlers from that state for some years, so that it was growing very slowly for a Western state; but the immense wheat crop of last year seems to have restored confidence generally, and an immense number of new farms will be begun this year. Most of the railroads of Minnesota have large grants of land, and a very large proportion of this land is capable of producing large crops of excellent spring wheat if the grasshoppers do not invade the state; which has happened but seldom. Once fairly occupied, the Minnesota railroads, or most of them, will be sure to command a large traffic in agricultural products, if they are not unduly multiplied. Hitherto they have been among the least profitable in America.

THE PENNSYLVANIA RAILROAD MEETING seems to have been much like the ordinary English corporation meeting, except that the President did not make a speech. The report was discussed, questions concerning the company's business were asked and answered, and generally the stockholders seem to have recognized the fact that they are co-partners, and that the company's business is their business, which they have a right to know and inquire about. One of the results of this rational kind of railroad meeting is that a great deal of noise is made by a few stupid or suspicious or evil-meaning stockholders, as is seen by the reports of nearly every British meeting, especially if the company is not doing well; but this is only a disagreeable and not at all a dangerous feature. In the long run suspicion is disarmed when there have been unlimited opportunities for questioning in public. Some of the Pennsylvania stockholders seemed not to relish the idea of taking a 2 per cent. dividend in 4 per cent. debentures, as was to be expected. They probably do not appreciate the fact that for this dividend they will receive their own obligations, bearing more than 7 per cent. interest and purchasable now largely below par. Whether a 7 per cent. stock guaranteed by the Pennsylvania is worth more or less to the outside public, to the Pennsylvania Railroad stockholders it is worth all the face of it calls for, and will be as long as Pennsylvania stock is worth anything.

BALLS are given in some parts of the country on almost all sorts of occasions, house-warmings being a frequent one, and barn-buildings a not very uncommon one. But it is something new, we believe, to rejoice over a freight depot in that way. Yet now we have the "Railroad Gazette and Ladies" invited to a "grand ball and sociable" given at a Kentucky station on the Paducah & Memphis Railroad, "on the occasion of the completion of our new freight depot," the use of which has been tendered for the occasion. And the managers of the ball and the railroad seem to have co-operated in more than this, in a way which will bring the railroad, which cannot dance, some returns; for the invitation states that "on presentation of this invitation at the ticket office of the Paducah & Memphis Railroad, excursion tickets will be sold to you at not exceeding \$1 for the round trip to Mayfield and return, for gentlemen, and 50 cents for ladies." As admission to the ball was free, it would seem that the railroad was the sole

beneficiary. It is to be hoped that the dancers were many, especially those who came by railroad, and that the latter got something toward paying the cost of the new freight depot, whose completion was so celebrated.

Point Bridge.

In the present number of our paper we submit to our readers the first of a series of illustrations of "Point Bridge" across the mouth of the Monongahela River, at Pittsburgh, Pa. This bridge is remarkable for the length of its span, the system adopted in its construction, its ornamental details, and, more particularly, for the favorable results of the tests it was subjected to. The bridge connects the city of Pittsburgh with South Pittsburgh, and is built for roadway traffic, with double tramways and sidewalks for foot passengers. It was built by the American Bridge Company, from the plans, and under the direction, of Mr. E. Hemberle, its Chief Engineer. In the construction of the bridge it was necessary to consult the interests of navigation, which required an uninterrupted navigable channel of the natural width of the river, at low water, and headroom sufficient to admit of the largest-sized boats passing under the bridge at an ordinary boating stage, for the purpose of readily handling the coal fleets. Under these conditions the main span was calculated at a width of 800 feet from centre to centre of piers, and the elevation of the lowest part of the structure at 80 feet above low water in the centre of the channel, the latter being 270 feet distant from the south pier. The north shore, at the Pittsburgh side, is only 27 feet above low water, while the south shore rises to an elevation of 70 feet, and both sides are lined with public thoroughfares, with which it was required to connect the bridge. Hence it became necessary to construct spans of 145 feet in the clear on either side, and to limit the reach of the back chains to anchor-walls to a distance of 225 feet from centres of piers. In compliance with these requirements the shore spans were built independent of the back chains, and the anchor masonry was constructed so as to rise 20 feet above the roadway, forming pedestals between the latter and the side-walks.

PRINCIPLES OF CONSTRUCTION.

The main span of this bridge is constructed on a stiffened chain suspension principle, the design of which is novel. In ordinary suspension bridges the roadway is suspended by hanging rods from chains or cables which stretch from pier to pier. In such a structure, the chains or cables, as well as the platform, are flexible longitudinally—a fact plainly demonstrated whenever the bridge is burdened at one end more than at the other by a moving load, or whenever it is subjected to wind pressure from above or below. To improve suspension bridges in this respect has been the aim of many engineers. The simplest improvement has been effected by keeping the parts of the curved chain or cable most liable to deformation in their proper places by attaching them to the top of towers by straight chains or wire rope stays, which plan was first adopted by Ordish in Europe, and by Roebling in this country.

A method for rendering the chain itself rigid has been attempted by dividing it into two parts, placed one above the other, and bracing them together. A railroad bridge built upon this system, with a span of 260 feet, is in actual use at Vienna, Austria, but the same could not be efficiently applied to a long-span bridge. A system according to which a single chain is connected to the platform of the roadway, by bracing, was adopted in the construction of Lambeth bridge across the Thames in London, built in 1862, the bridge having spans 280 feet wide, and in a foot-way bridge over the Main at Frankfurt, Germany, of 262 feet span, built in 1869. This system properly improved may fulfill all the requirements to insure a proper degree of stiffness, but in long spans the bracings between roadway and chains would necessarily be of so great length as to make the system ineffective as well as very expensive.

Mr. T. Claxton Fidler, of Great Britain, some years ago proposed a plan in which the chains are not hung in the catenary line. He uses two members which meet at the towers and at the centre of the span, the meeting points being in the catenary line, while from the centre of either way to the towers the upper member is straight and the lower member is hung so as to fall below the catenary the same distance as the upper member is above it. Mr. Fidler's plan has the advantage of subjecting the chord-members to tension only, the members assisting each other in carrying a uniform load. It requires long bracing members, however, and as neither the upper nor the lower members are self-supporting in their proper shape, the erection of structures according to this plan becomes difficult, notably so in all cases where falsework cannot be put up from the river bed, the entire plan being in all cases extremely expensive for bridges of long span.

Mr. Hemberle's plan, as represented by Point Bridge, consists of tower and chains, with platform suspended therefrom in the same manner as in a regular chain suspension bridge. To this is added a stiffening system above the chains, and rigid posts arranged between chains and platform so as to prevent the roadway from undulating or oscillating independent of the structure above. The stiffening appliances above the chains consist in rigid chords running in straight lines from the top of the tower toward the centre of the chain, and connected thereto by a hinged joint at each end. Between these chords and the chains there is a system of bracing, consisting of posts and diagonal tie-rods, all connections being pin-jointed. The chain being a catenary, or curve of equilibrium, bears all the permanent load of the structure, without straining the stiffening trusses. This object was accomplished by erecting the bridge completely before connecting the ends of the straight top chords to the centre joint. The rods are provided with turn-buckles, and are so adjusted as to be strained under moving loads only.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows: Pittsburgh, Cincinnati & St. Louis, annual meeting, at the office in Columbus, O., March 19, at 10 a. m. Besides the usual business, the stockholders will vote on a lease of the Pittsburgh, Wheeling & Kentucky Railroad. Pennsylvania, adjourned annual meeting, in Philadelphia, March 26, at 10 a. m.

Dividends.

Dividends will be paid as follows: New York Central & Hudson River, the usual quarterly dividend of 2 per cent., payable April 15. Transfer books will be closed from March 15 to April 20. New York & Harlem, 3 per cent. from the profits of the city (horse railroad) lines payable April 1. This is in addition to the 8 per cent. dividends paid by the New York Central & Hudson River as lessee of the steam railroad line. Lehigh Valley, 1 per cent., quarterly, payable April 15. Transfer books will be closed March 22. Western Union Telegraph, 1½ per cent., quarterly, payable April 15. Dubuque & Sioux City (leased to Illinois Central), 3 per cent., payable April 15.

Foreclosure Sales.

The West Wisconsin road was sold in Madison, Wis., March 1, under a decree of foreclosure of the first mortgage, and was bought by H. H. Porter, of Chicago, who represents a majority of the bondholders. The road had a bonded debt (including funded coupons) of \$5,284,088 on a line from Elroy, Wis., to Hudson, 178 miles. A plan of reorganization has been adopted.

The Chicago, Clinton & Western road was sold at Iowa City, Ia., March 6, to satisfy certificates of indebtedness amounting to about \$350,000. Bought by Peter A. Dey for account of a number of the holders of the certificates. The amount of his bid was \$141,500. The certificates represented in the purchase are mainly held in Clinton and vicinity, but a majority of the debt was owned by the St. Louis Iron Company. The road has iron laid from Clinton, Ia., westward about 20 miles, and is in operation from Iowa City to Elmira on the Burlington, Cedar Rapids & Northern, 9 miles, with some 20 miles more graded.

The Chicago & Iowa road was sold in Chicago, March 9, as previously announced, in spite of an attempt made by some of the stockholders to postpone the sale. The sale was under foreclosure of a second mortgage for \$1,150,000, a first mortgage for \$600,000 remaining. There was some competition at the sale, and the price was run up to \$900,000, at which the road was sold to Wm. G. Weld, G. B. Chandler and J. M. Walker, as trustees for the bondholders. The road runs from Aurora, Ill., to Forreston, 80 miles. A representative of the stockholders protested against the sale, and gave notice that an appeal would be taken.

The Pensacola Railroad, formerly the Pensacola & Louisville, will be sold by A. E. Maxwell, Trustee, under a decree of the Florida Circuit Court, at Pensacola, Fla., May 6. The sale will include the road from Pensacola to the junction with the Mobile & Montgomery near Pollard, Ala., 44 miles, with all its appurtenances, and a number of tracts of land. First-mortgage Pensacola & Louisville bonds will be received in payment of the purchase money at their *pro rata* value, except that enough must be paid in cash to cover the costs of the suit. There are \$585,000 of these bonds outstanding.

Car Accountants' Association.

A circular from the Secretary, Mr. F. M. Luce, dated Chicago, March 5, 1878, gives notice that the third annual meeting of the Car Accountants' Association will be held in New York on April 26, 1878.

Arrangements have been made with the Fifth Avenue Hotel, Twenty-third street and Broadway, for the accommodation of delegates. The meeting will be held in the hotel parlors, and it is the desire of the Committee of Arrangements to have all members stop at this house.

An invitation is hereby extended to all railroads and fast freight lines to send their car accountant or the person in direct charge of the car accounts to this convention.

ELECTIONS AND APPOINTMENTS.

Atlanta & Charlotte Air Line.—At the annual meeting in New York, March 13, the following directors were chosen: Eugene Kelly, George Warren Smith, Abram S. Hewitt, William H. Fogg, Fomeroy P. Dickinson, Hiram Sibley, Henry C. Hardy, Belden R. McAlpine, Frank P. Clark, Hiram W. Sibley, Skipwith Wilmer.

Brooklyn, Flatbush & Coney Island.—The officers of this company are: President, John A. Lott; Secretary, Monroe B. Washburn; Treasurer, Charles C. Betts.

Boston & Albany.—The board has re-elected Chester W. Chapin, President; D. Waldo Lincoln, Vice-President; Wm. Bliss, General Manager; C. E. Stevens, Treasurer; J. A. Rumrill, Secretary and Clerk. It is still stated that Mr. Chapin will retire soon.

Chicago, Clinton, Dubuque & Minnesota.—At the annual meeting in Dubuque, Ia., recently, the following directors were chosen: Alpheus Hardy, Dubuque, Ia.; James F. Joy, Detroit, Mich.; Nathaniel Thayer, Sidney Bartlett, F. Bartlett, H. H. Hunnewell, John A. Burnham, J. W. Brooks, John N. Denison, Boston.

Coast Line.—At the annual meeting in Savannah, Ga., March 6, the old board was re-elected, as follows: H. Ambos, D. C. Bacon, M. J. Desvergers, M. J. Doyle, T. H. Harden, Alfred Haywood, D. O'Connor, F. J. Reckert, David Wells.

Dubuque Southwestern.—Mr. Joseph Sampson is appointed Acting Superintendent, to date from March 1. Office at Dubuque, Iowa.

Golden, Boulder & Caribou.—The officers are: T. G. Lyster, President; T. W. Moffat, Secretary and Treasurer.

Grand Rapids & Indiana.—At the annual meeting in Grand Rapids, Mich., March 6, the following directors were chosen: W. O. Hughart, Harvey J. Hollister, Grand Rapids, Mich.; Pliny Hoagland, L. P. Randall, Fort Wayne, Ind.; J. G. Wait, Sturgis, Mich.; Mancel Talcott, Chicago; Thomas D. Messler, J. N. McCullough, Wm. Thaw, Pittsburgh; John P. Green, George B. Roberts, Thomas A. Scott, Philadelphia; Robert B. Potter, New York.

Kansas City, St. Louis & Chicago.—At the annual meeting in St. Louis, March 6, the following directors were chosen: John J. Mitchell, R. P. Tansey, John M. Woodson, H. J. Higgins, John W. Reed, Thomas Shackelford, George Straut, W. H. Mitchell, John P. Rea. The board elected John J. Mitchell, President; R. P. Tansey, Secretary and Treasurer. This is the company which is building the Chicago & Alton Extension to Kansas City.

Missouri, Kansas & Texas.—The position of General Superintendent has, it is stated, been offered to Mr. A. A. Talmage, now of the Missouri Pacific.

Mr. F. W. Coombs has been appointed Superintendent of the Osage Division.

Missouri Pacific.—At the annual meeting in St. Louis, March 5, the following directors were chosen: Oliver Garrison, D. R. Garrison, D. K. Ferguson, W. M. Samuel, St. Louis; Joseph L. Stephens, Booneville, Mo.; A. M. Billings, Chicago; C. K. Garrison, W. R. Garrison, Russell Sage, F. R. Baby, J. P. Kennedy, A. V. Stout, George J. Forrest, New York. The only new director is Mr. Baby, who succeeds D. R. Mangum. The board re-elected C. K. Garrison President; Oliver Garrison, Vice-President; C. L. White, Secretary.

New York Elevated.—Col. R. E. Ricker has been appointed General Manager. He is well known as a railroad man of wide experience; he served on the New York Central and the Michigan Southern, was General Superintendent of the Terre Haute & Indianapolis, then Superintendent of Motive Power of the Pennsylvania, and finally Superintendent and Engineer of the Central Railroad of New Jersey, having been appointed to that position after the death of Mr. Josiah O. Stearns in 1877. He left the Central, in October, 1876, and has since been in business in New York as a consulting engineer and agent for railroad supplies.

Clean, Bradford & Warren.—The New York and Pennsylvania divisions of this road have been consolidated under one management, with the following officers: J. D. Yeomans, Superintendent; C. S. Whitney, Treasurer; C. K. Thompson, Auditor.

Philadelphia & Reading Coal & Iron Co.—Mr. E. A. Quintard has been appointed European Sales Agent, the locality of his office to be fixed hereafter.

The office of General Sales Agent, heretofore held by Mr. Quintard, is abolished. The Eastern, Western and New York sales agents will report directly to Thomas M. Richards, General Coal Agent, who will have general charge of those agencies. Mr. Samuel C. Harris will be known as Line and Southern Sales Agent, and will control all sales and agencies in the Southern States, Pennsylvania, Delaware and that part of New Jersey south of Mercer and Ocean counties.

Providence & Worcester.—Mr. Wm. E. Chamberlain, of Boston, has been appointed Superintendent, in place of Wm. D. Hilton, resigned.

Quincy, Missouri & Pacific.—At the annual meeting in West Quincy, Mo., March 5, the following directors were chosen: George Adams, S. Boyington, J. M. De France, Amos Green, Thomas Jasper, W. B. Larkworthy, F. M. Merke, E. M. Miller, Thomas Raymond, Henry Root, Hugh Smith, John Wheeler, E. V. Wilson.

Rumford Falls & Buckfield.—At the annual meeting recently the following directors were chosen: S. C. Andrews, S. T. Corser, Otis Hayford, Israel Washburn, Jr., N. L. Marshall. The board re-elected Israel Washburn, Jr., President; George D. Bickard, Clerk; S. C. Andrews, Treasurer.

St. Louis, Kansas City & Northern.—At the annual meeting in St. Louis, March 5, the following directors were chosen: B. W. Lewis, Jr., John Jackson, John A. Scudder, John H. Beach, Wm. Spear, L. B. Parsons, James F. How, C. P. Burnham, St. Louis; Solon Humphreys, John A. Jameson, W. R. Garrison, New York. The board re-elected B. W. Lewis, Jr., President; James F. How, Vice-President and Secretary; Thomas McKissock, General Superintendent; R. D. Kohn, Treasurer; D. B. Howard, Auditor; Wells Blodgett, Attorney.

St. Louis & San Francisco.—At the annual meeting in St. Louis, March 5, the following directors were chosen: James Baker, Samuel Hayes, St. Louis; Frederick Butterfield, S. M. Seely, Andrew Peirce, W. F. Buckley, Thomas T. Buckley, George F. Stone, J. P. Robinson, C. J. Bergen, Joseph Seligman, New York; Francis B. Hayes, W. H. West, Boston. The new directors are Messrs. S. Hayes, Seely, Peirce, Butterfield and West, who succeed C. Littlefield, W. H. Coffin, W. D. Griswold, Uriel Crocker and G. S. Curtis. Mr. Peirce was formerly a director and President of the Company.

St. Louis Union Depot.—At the annual meeting in St. Louis, March 6, the following directors were chosen: W. D. Griswold, R. H. Shoemaker, Wm. Taussig, Samuel Gaty, St. Louis; Wm. H. Clements, J. N. Kinney, R. M. Shoemaker, Cincinnati.

Warren.—At the annual meeting in Belvidere, N. J., March 4, the following directors were chosen: John I. Blair, Selden T. Scranton, Dewitt C. Blair, Samuel S. Clark, Jehiel G. Shipman, Samuel Sloan, John Brisbin, Moses Taylor, Wm. E. Dodge. The road is leased to the Delaware, Lackawanna & Western.

PERSONAL.

—Mr. A. B. Garner has, it is said, resigned his position as General Superintendent of the Missouri, Kansas & Texas Railway.

—Mr. D. Waldo Lincoln, Vice-President of the Boston & Albany Company, was thrown from his horse in Worcester, Mass., one day last week, and had one rib broken and a shoulder badly bruised.

—Mr. Henry Williams, Master of Transportation of the Louisville, New Albany & Chicago Railroad, died at New Albany, Ind., Feb. 28. He had been on the road 15 years, nine as conductor and six years in his late position.

—Mr. C. C. Gale, Superintendent of the Indianapolis Division of the Cleveland, Columbus, Cincinnati & Indianapolis Railroad, completed his twenty-fifth year of service with the company March 1. He began on the road as a brakeman. The company seems to a good one to stay with, for there are now 60 men on its pay-rolls who have been 20 years on the road, and 21 who have served 25 years.

—Mr. Sebastian M. Craver, formerly Freight Agent for the Delaware & Hudson Canal Company, committed suicide by shooting himself at his residence in Albany, N. Y., March 9. He left the company's service about a year ago.

—Mr. Alexander Jacobus, who represents the Eighth District of Hudson County in the New Jersey Legislature, is a member of the Brotherhood of Locomotive Engineers. In a recent debate on the question of repealing the law against strikes, which was passed last year, he said that they did not object to the section forbidding employees to leave their trains on the road; they did not desire to inconvenience passengers, of whose comfort they were always careful, but they did not believe that railroad officers should have power to compel men to take out trains when they had given notice of their intention to quit work at a certain time.

—Mr. H. H. Courtright, late General Freight Agent of the Hannibal & St. Joseph, has been offered the agency of the Missouri Pacific and the St. Louis, Kansas City & Northern roads at Kansas City.

TRAFFIC AND EARNINGS.

Kansas Emigrant Travel.

A great emigration to Kansas is reported this spring and the railroads to Kansas City, Leavenworth and Atchison have had an unusually large passenger business for several

weeks. A large part of this traffic is of second-class passengers or of colonies or parties carried at special rates, but it must have considerably increased the revenue of the roads. Most of the emigrants are going to the central and western sections of the State, the Atchison, Topeka & Santa Fe being especially favored, though a considerable number of new settlers are reported as stopping in the eastern counties.

Cotton Movement.

For the six months of the crop year, from Sept. 1 to March 1, the receipts of cotton at the seaboard and the total exports have been, in bales:

	1877-78.	1876-77.	Inc.
Receipts.....	3,570,054	3,573,007	6,047
Exports.....	2,221,664	2,218,987	2,677

There is thus very little difference in the amount moved in the two years, indicating that the crop of 1877 was as large as that of 1876, which was very nearly as large as any ever produced. The movement was very light early in the crop year, the crop having been late to mature, but during the winter it has been exceptionally heavy, for the first two months of the calendar year being as follows:

	1878.	1877.	Increase.	P. c.
Receipts.....	1,246,139	1,010,944	235,195	23.2
Exports.....	1,101,463	905,020	196,443	21.7

Which indicates that some of the Southern roads had had an unusually large winter business.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending Dec. 31:	1877.	1876.	Inc. or Dec.	P. c.
Clev. & Pittsburg.....	\$2,392,326	\$2,484,029	Dec. \$91,703	3.7
Expenses.....	1,291,662	1,391,447	Dec. 99,785	7.2
Net earnings.....	\$1,100,664	\$1,092,582	Inc. \$8,082	0.7
Earn. per mile.....	10,609	11,016	Dec. 407	3.7
P. c. of exp'n.....	54.00	56.02	Dec. 2.02	3.6
St. L., I. Mt. & So.....	4,500,422	4,002,045	Inc. 498,377	12.5
Expenses.....	2,368,520	2,331,020	Inc. 37,500	1.6
Net earnings.....	\$2,131,902	\$1,671,025	Inc. \$460,877	27.6
Earn. per mile.....	6,575	5,847	Inc. 728	12.5
P. c. of exp'n.....	52.63	58.25	Dec. 5.62	9.6
Whitby, Port Perry & Lindsay.....	30,200	50,501	Inc. 8,699	17.2
Expenses.....	33,906	31,406	Inc. 4,500	14.3
Net earnings.....	\$23,294	\$19,095	Inc. \$4,199	22.0
Earn. per mile.....	1,316	1,122	Inc. 194	17.2
P. c. of exp'n.....	60.65	62.18	Dec. 1.53	2.5

Two months ending Feb. 28:

	1878.	1877.	Inc.	P. c.
Atchison, Topeka & Santa Fe.....	\$336,500	\$271,214	Inc. \$65,286	31.4
Bur. & Cedar Rap. & Northern.....	312,608	142,058	Inc. 170,550	12.0
Central Pacific.....	2,091,000	2,115,786	Dec. 24,786	0.8
Chicago & Alton.....	615,677	676,655	Dec. 60,978	9.0
Chi. & Northw'n.....	2,139,904	1,586,783	Inc. 553,121	34.9
Denver & Rio G.....	115,266	82,040	Inc. 33,226	40.5
Grand Trunk.....	1,601,082	1,452,181	Inc. 148,881	10.3
Great Western.....	833,507	624,232	Inc. 209,275	33.5
Ill. Cen. & Ill. lines.....	808,164	726,267	Inc. 81,897	11.4
Ill. Cen. & Springfield Div.....	30,750	.....	.....	.....
Ill. Central, Iowa lines.....	252,793	193,572	Inc. 59,221	30.6
Kansas Pacific.....	368,909	357,359	Inc. 11,550	3.2
Missouri Pacific.....	574,677	531,242	Inc. 43,435	8.2
St. L., A. & T. H., & Belleville Line.....	74,850	88,159	Dec. 13,309	15.1
St. Louis & San F.....	170,687	206,536	Dec. 35,849	20.9
T. Peoria & War.....	225,344	159,149	Inc. 66,195	41.6

Month of January:

	1878.	1877.	Inc.	P. c.
Atlantic & Great Western.....	\$290,052	\$266,549	Inc. \$23,503	12.2
At. Miss. & Ohio.....	142,537	109,986	Inc. 32,551	29.6
Chi., Burlington & Quincy.....	1,045,467	876,835	Inc. 168,632	19.2
Net earnings.....	479,697	303,476	Inc. 176,221	57.7
P. c. of exp'n.....	54.14	65.38	Dec. 11.24	17.3
Clev. Mt. Vernon & Delaware.....	29,156	26,899	Inc. 2,257	8.4
Net earnings.....	5,755	3,278	Inc. 2,477	75.1
P. c. of exp'n.....	80.69	87.48	Dec. 6.79	7.8
Dakota Southern.....	15,053	8,497	Inc. 6,556	77.1
Net earnings.....	7,821	.....	.....	.....
P. c. of exp'n.....	49.31	.....	.....	.....
Kansas Pacific.....	189,456	179,296	Inc. 10,160	5.7
Net earnings.....	51,610	46,257	Inc. 5,353	11.6
P. c. of exp'n.....	72.93	73.87	Dec. 0.94	1.3
Nashville, Chatt. & St. Louis.....	177,806	150,466	Inc. 27,340	18.2
Net earnings.....	78,752	63,475	Inc. 15,277	24.1
P. c. of exp'n.....	55.65	58.00	Dec. 2.35	4.1
Paducah & Mem.....	10,549	15,110	Dec. 4,561	9.5
Net earnings.....	4,851	1,230	Inc. 3,621	294.4
P. c. of exp'n.....	70.88	92.33	Dec. 21.45	23.4
St. Joseph & West.....	45,802	28,280	Inc. 17,522	61.9
Net earnings.....	493	.....	.....	.....
P. c. of exp'n.....	99.98	.....	.....	.....
St. Paul & Sioux City.....	40,467	30,597	Inc. 9,870	32.3
Net earnings.....	13,805	4,963	Inc. 8,842	176.8
P. c. of exp'n.....	66.65	83.77	Dec. 17.12	20.4
Sioux City & St. Paul.....	25,959	15,522	Inc. 10,437	67.3
Net earnings.....	6,978	.....	.....	.....
P. c. of exp'n.....	73.00	107.23	Dec. 34.23	32.0
Union Pacific.....	837,340	815,354	Inc. 21,986	2.7
Net earnings.....	501,330	492,902	Inc. 8,428	1.7
P. c. of exp'n.....	40.15	39.57	Dec. 0.58	1.5

Month of February:

	1878.	1877.	Inc.	P. c.
Atchison, Topeka & Santa Fe.....	\$185,500	\$136,350	Inc. \$49,150	36.0
Bur. & Cedar Rap. & Northern.....	147,196	68,004	Inc. 79,192	116.3
Central Pacific.....	974,000	945,171	Inc. 28,829	3.0
Chi. & Alton.....	298,966	325,047	Dec. 26,081	8.0
Chi. & Northw'n.....	1,062,013	779,057	Inc. 282,956	36.2
Denver & Rio G.....	55,065	40,182	Inc. 14,883	37.0
Ill. Cen. & Ill. line.....	304,413	358,866	Dec. 54,453	17.9
" Spring Div.....	11,243	.....	.....	.....
" Iowa line.....	124,371	100,257	Inc. 24,114	24.0
Kansas Pacific.....	179,453	181,094	Dec. 1,641	0.9
Missouri Pacific.....	279,866	265,339	Inc. 14,527	5.5
St. L., Alton & T. H., Belleville line.....	35,008	36,789	Dec. 1,781	4.8
St. Louis & San Francisco.....	82,145	106,049	Dec. 23,904	22.6
Toledo, Peoria & Warsaw.....	84,878	80,579	Inc. 4,299	5.3

Week ending March 1:

	1878.	1877.	Inc.	P. c.
Great Western, of Canada.....	\$79,233	\$87,659	Dec. \$8,426	9.6

Week ending March 2:

	1878.	1877.	Inc.	P. c.
Grand Trunk.....	\$183,308	\$182,512	Inc. \$796	0.4

East-Bound Rates.

The new tariff which went into effect Monday, March 11, gives rates on the basis of the following from Chicago to New York in cents per 100 lbs.:

Class.	1.	2.	3.	4.	Bulk.	Dressed.	Dressed.	Cheese.
					meats.	meats.	poultry.	and seeds.

150	110	85	30	35	75	85	40	40
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Grain in bulk, boxed meats and barreled meats, lard, etc., go at fourth-class rates. Flour per barrel is twice the rate of grain per 100 lbs. Boston rates are ten cents higher than New York rates for the first and second classes and five cents higher for the other classes. To Baltimore the rate is three

cents less, and to Philadelphia two cents less for all the classes.

Ice Traffic.

Ice traffic is this spring a very considerable item in the business of many roads, especially in the West. The usual local sources of supply of many towns and cities have failed, and they are forced to draw on those places further north, where the weather has been severe enough to make ice heavy enough to store for winter use. On the Eastern sea-board the supply will be drawn largely from Maine, and will be carried by water, but in the interior the ice must go by rail, and many north-and-south lines connecting with St. Louis, Cincinnati, and cities similarly situated, will find this business a considerable addition to their revenues this spring.

Coal Movement.

Coal tonnages for the first two months of the year are reported as follows, the tonnage reported in each case being only that originating on the line to which it is credited:

	1878.	1877.	Inc. or Dec.	P. c.
Anthracite:				
Philadelphia & Reading.....	380,654	599,180	Dec. 212,526	35.5
Northern Central, from Shamokin Division and Summit Branch R. R.....	59,699	57,877	Inc. 1,822	3.1
Danv., Hazle & Wilkes b. Central, of N. J., Lehigh Division.....	3,329	4,022	Dec. 693	17.3
Lehigh Valley.....	264,877	310,494	Dec. 45,617	14.7
Pennsylvania & N. Y.....	434,829	529,745	Dec. 94,916	17.9
Del., Lack. & West.....	1,738	7,145	Dec. 5,407	75.6
Del. & Hud. Canal Co.....	331,831	318,264	Inc. 13,567	4.3
Pennsylvania Coal Co.....	450,135	319,423	Inc. 130,712	40.9
State Line & Sullivan.....	87,719	128,501	Dec. 40,782	31.7
	5,635	2,054	Inc. 3,581	174.3

Total anthracite.....2,026,446 2,276,705 Dec. 250,259 11.0

Semi-bituminous:

	1878.	1877.	Inc. or Dec.	P. c.
Cumberland, all lines.....	106,630	106,696	Dec. 66	.....
Huntingdon & Broad Top.....	22,467	21,653	Inc. 814	3.3
East Broad Top.....	12,572	25,958	Dec. 13,386	51.5
Tyrone & Clearfield.....	181,428	223,307	Dec. 41,879	18.8
Belleville & Snow Shoe.....	6,609	9,455	Dec. 2,846	30.1

Total semi-bitum's.....329,706 387,157 Dec. 57,451 14.8

Bituminous:

	1878.	1877.	Inc. or Dec.	P. c.
Barclay.....	47,654	66,514	Dec. 18,860	28.4
Allegheny Reg'n, Pa. R. R.....	30,346	31,030	Dec. 684	1.6
Penn. & Westmoreland gas coal.....	130,103	151,858	Dec. 21,755	14.3
West Pennsylvania R. R.....	14,327	.....	.....	.....
Southwest Penn. R. R.....	5,171	107,302	Dec. 29,008	27.0
Pitts. Region, Pa. R. R.....	58,796	.....	.....	.....

Total bituminous.....286,597 356,704 Dec. 70,107 19.7

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the first two months of the year was as follows:

	1878.	1877.	Inc. or Dec.	P. c.
South Amboy for shipment.....	102,065	80,168	Inc. 21,897	27.3
Local distribution on New Jersey lines.....	26,746	28,722	Dec. 1,976	6.9
Company's use on New Jersey lines.....	14,246	13,100	Inc. 1,146	8.7

Totals.....143,057 121,990 Inc. 21,067 17.3

Of the total this year 74,033 tons were from the Lehigh, and

there seemed to be no need of the final farewell just yet, so the woman on the depot platform walked along, still keeping hold of the hand of her friend. The speed of the train increased, so did the speed of the woman on the platform. Still they kept hold of hands. A young man, an interested observer of the transaction, could not quite make up his mind whether she that was off the train wished to get on, or she that was on the train wished to get off. The speed of the train still increased, until the woman on the platform began to trot, and then to run; still they kept hold of hands. Those acquainted with the locality will remember that the platform extends some distance from the station, and at the end of it a fence commences, which runs along a couple of feet or so from the track. The woman on the platform by this time was going pretty fast, and when she reached the end of the platform she didn't stop. Still they kept hold of hands. The result was the woman on the platform fell down between the fence and the moving train, and pulled the woman from the car down there with her. There the two were piled up in a small space, in imminent danger of getting under the train that was moving quickly by them. There was a second of silent astonishment and then they both screamed. The interested spectator now became a frightened spectator and then a rescuer. He rushed to the aid of these unfortunates, expecting every moment to see one or both caught by the train and dragged under the wheels. Before he reached them, however, one had in some way managed to get through the fence and out of the way, while the other lay on her back, kicking frantically. Fearing she would in her wild endeavors strike the train, to her own great sorrow, the young man reached in through the fence, caught her by the feet and held them till the train had passed, when she arose and inquired if she was perfectly safe.

The Grades and Alignment of the Mexican Railway.

The inclines on this railway are heavy. Steep grades and short curves occur chiefly in the section 50 to 100 miles west of Vera Cruz. The difference of level between Vera Cruz and Paso del Macho, 47½ miles, is 1,559½ ft.; in this section the maximum grade is 2½ per 100, and the sharpest curves are 600 ft. radius. From Paso del Macho to Boca del Monte, 60 miles, the difference is 6,342½ ft., and the following are the prevailing grades: 7.61 miles, 2 per cent., or 113 ft. per mile; 9.14 miles, 2½ per cent., or 132 ft. per mile; 5.89 miles, 5 per cent., or 158 ft. per mile; 1.55 miles, 3½ per cent., or 184 ft. per mile; 13.95 miles, 4 per cent., or 211 ft. per mile. This makes a total of 38.14 miles of heavy grade. On the remaining 21.86 miles the incline is mostly 1.5 per 100, or 80 ft. The curves vary from 400 ft. radius to 325 ft. radius, the latter being the sharpest curve on the whole line. The works are large and important, consisting of 27 iron bridges and viaducts, 16 tunnels, and 96 arch and open culverts. The length of tunnel is 2,941 ft., and of bridging 4,321 ft. In respect of solidity and originality of construction these works are equal to any in Europe or the United States. Between Boca del Monte and the city of Mexico the line is comparatively straight and level, the grade nowhere exceeding 1.5 per 100, nor the curves 900 ft. radius. No very steep grades occur on the Puebla Branch, the maximum being 1.5 per 100, or 80 ft. to the mile; the sharpest curve is 400 ft. radius. At Vera Cruz is a mole built of iron 725 ft. long and 60 ft. wide at the end standing in the sea. There are three tracks on this mole, and cranes are provided for loading and discharging vessels and launches. As the larger class of vessels cannot reach the pier, the company have provided for their use two steam tugs and five launches. The total weight of iron used in constructing the mole was 553 tons.

Infringement of Westinghouse Brake Patents.

The Pittsburgh *Telegraph* of March 7 says: "Mr. George Westinghouse, Jr., through his counsel, B. C. Christy, Esq., yesterday filed a bill in equity in the United States Circuit Court, against the Emlenton, Shippensburg & Clarion Railroad Company, alleging an infringement of the patent on the Westinghouse air brake, in vacuum engines, and other appliances for checking the speed of trains in making stops. The Court is asked for an injunction to restrain the defendant company from infringing upon the plaintiff's patent."

Prices of Rails.

At New York sales of 7,000 tons steel rails are noted at \$41 per ton at the mill. Quotations are \$41 to \$43 for steel, and \$33 to \$36 per ton for iron rails at the mill. For old rails some small sales are noted at \$19 per ton. In Philadelphia steel rails are quoted at \$41 to \$43, and iron \$33 to \$35 per ton, with no sales of importance. Old rails are in some demand, bringing \$20 to \$21 per ton. Nearly all the steel rail mills are now full of work with large orders on hand.

OLD AND NEW ROADS.

Baltimore & Ohio.—The Baltimore *Gazette* says: "Mr. William M. Clements, Master of Transportation of the Baltimore & Ohio Railroad Company, issued an order for the discharge of all the ticket collectors and parlor-car conductors, to take effect next Friday. The ticket collectors were appointed about a year ago and have given entire satisfaction, and their discharge is attributable to a desire of the company to reduce as far as practicable the operating expenses of the company. Some three hundred men were also discharged from the company's shops on Saturday." The officials of the company state that the high state of efficiency of the power and equipment, together with its comparatively lessened business, rendered this step necessary. These men were employed on full time during the winter months, when the forces were increased. It has been the custom of the company to make reductions in its forces when its equipment has been raised to the standard at which it now is. It is understood that it is not contemplated to make any reduction in the rate of wages of the company's employees, and that the men employed will be kept on full time.

The bill prepared by the committee of the Maryland Legislature as a compromise of the tax questions in dispute with this company, provides that on or before July 1, 1878, the company shall pay to the Comptroller \$100,540.64 in satisfaction of all claims for State taxes upon the gross receipts of the company from April 1, 1872, to Dec. 31, 1877. The sum of \$365,370.56 shall be taken as the whole sum due by the company to the State up to Jan. 1, 1878, for the State's proportion of the whole amount of the money received by the company for the transportation of passengers on the Washington Branch, and for all dividends on the State's stock in the Washington Branch up to October, 1877, after crediting to the company all its claims, of whatever description, against the State. This sum (excepting \$370.56 to be paid in cash) to be paid in 6 per cent. bonds redeemable in ten years. Hereafter the company shall pay annually one-half of 1 per cent. on all the gross earnings of the property in the State of Maryland, this sum to be in full satisfaction of all taxes on the property, including the Washington Branch. In return, the company is to accept the act and give up the exemption granted it by the original charter; also to agree to carry coal, iron, ores, lumber and stone to or from the Chesapeake & Ohio Canal at Cumberland at uniform rates (specified in

the bill), and to allow connection to be made with its road at or near Cumberland by any new road which may be built hereafter.

It is understood that the company is willing to accept the proposed compromise as far as taxation is concerned, but objects to the provisions requiring exchange of business with the canal at Cumberland.

Black River & St. Lawrence.—This road was built several years ago from Carthage, N. Y., to Harrisville, 13 miles, and was laid with wooden rails. It was not very successful and has not been operated for two or three years past. The company now offers to lay an iron track of 3 feet gauge on the road and to run regular trains, if the town of Carthage will surrender the interest which it owns in the road.

Boston, Concord & Montreal.—The extension of this road from the present terminus at Groveton Junction, N. H., northeast into Coos County, is being discussed, and local subscriptions to a considerable amount have been offered.

Boston & Mystic Valley.—This company having filed an additional list of subscribers to the stock, bringing the amount subscribed by responsible parties up to that required by law, the Massachusetts Railroad Commissioners have authorized the issue of a preliminary certificate. As to whether the proposed connection with the Boston & Maine, at Somerville, and the laying of a third rail are allowable under the law, the Commissioners reserve their opinion, preferring to have a decision from the courts on some doubtful points.

Boston & Poughkeepsie.—The Railroad Committee of the Massachusetts Legislature has reported against the proposed State loan of \$1,000,000 to this company. The committee urges that the time has come when all new enterprises should stand upon their own merits, and that the State should refuse aid in all cases.

Brooklyn, Flatbush & Coney Island.—This company was formed last fall by the consolidation of the Coney Island & East River and the Flatbush, Coney Island, Park & Concourse companies. It has now a large force at work on a railroad of standard gauge from the Long Island Railroad's Atlantic avenue line, near Classon avenue, in Brooklyn, southward to Flatbush avenue, near the Willink entrance to Prospect Park and thence through Flatbush to Coney Island. The distance is about eight miles, and some heavy work is required. Full size locomotives are to be used to run the heavy excursion trains expected. The company has also bought a tract of land at the Coney Island terminus and will build a large hotel there.

Burlington, Denmark & Keosauqua.—The town of Denmark, Ia., has voted to levy a tax in aid of this projected road. A preliminary survey of the line is to be made at once.

Cairo & St. Louis.—The United States Circuit Court, at Springfield, Ill., has dissolved an injunction recently granted, restraining Collector Willis from distraining the property of this company, in satisfaction of revenue tax due on certificates of indebtedness, which were in the form of meal tickets and boarding-house checks issued by Receiver Smithers to employees of the road.

Central, of New Jersey.—The Committee of Detail give notice that all parties interested in the stock or bonds of this company, the bonds of the American Dock & Improvement Company, or of the Lehigh & Wilkesbarre Coal Company, are invited to call and sign the agreement for the equitable adjustment of its affairs.

To participate in the benefits of the agreement, stockholders must sign it on or before March 25.

Copies of the agreement may be obtained and subscriptions to the same will be received at the office of the company, No. 119 Liberty street; at the office of the Receiver of the Lehigh & Wilkesbarre Coal Company, No. 71 Broadway, or at the office of J. S. Kennedy & Co., No. 41 Cedar street, New York.

Central Vermont.—Argument was heard last week in the United States District Court at Burlington, Vt., in the suit begun by Brooks and others to enforce the priority of lien of the Vermont Central first-mortgage bonds over the bonds issued by the trustees and receivers.

Chancellor Royce's denial of the Vermont & Canada Company's petition for the appointment of a new receiver was based chiefly on the assumption that such a change would embarrass the Central Vermont Company in its management of the property, and would probably break up existing contracts and relations with other roads.

Chicago, Burlington & Quincy.—That business is active on this road may be judged from the fact that orders have been given for the construction of 500 more freight cars at the Aurora shops.

Notice is given that after March 20 the 7 per cent. consolidated mortgage bonds of this company can be registered at the National Bank of Commerce in New York, and coupons on all bonds so registered will be payable there. Coupons on all bonds of the same mortgage can henceforth be collected at the National Bank of Commerce in New York, or at the office of the company in Boston, at the option of the holders of the bonds.

Chicago & Iowa.—In Chicago, recently, P. B. Shumway and others filed a bill in equity to restrain the Chicago, Burlington & Quincy Company and its officers from voting at the annual meeting on 8,640 shares of stock in the Chicago & Iowa Company. The plaintiffs claim that the stock was not legally issued. A temporary injunction was granted, pending a further hearing.

An effort was also made to postpone the foreclosure sale of the road, but the Court finally refused to take action, and the sale was made, as noted elsewhere.

Cincinnati & Eastern.—This company now has under contract, to be completed by May 1, an extension of five miles from the present western terminus at Batavia Junction, O., on the Little Miami to a connection with the Miami Valley road, now under construction. It will then use the Miami Valley track into Cincinnati and also the terminal facilities of that road in the city. The company is also building a branch from a point on its main line 12 miles from Cincinnati, to New Richmond, a distance of 15 miles.

Danville, Roxboro & Durham.—It is proposed to build a railroad from Danville, Va., south to Vanceville, N. C., thence east through Leesboro to Roxboro, and thence south again to Durham on the North Carolina road. The whole length of the line is about 65 miles, and it passes through a good farming country, where tobacco is largely raised.

Detroit & Milwaukee.—A London dispatch says that the agreement between the Great Western Company and the English bondholders has been executed. It provides, as already noted, for a new first mortgage for \$2,000,000 to be exchanged for the prior lien bonds, Receiver's certificates, etc., and for a second mortgage for \$3,000,000, to be exchanged for the later bonds, the Great Western to guarantee all the new bonds.

Eel River.—This company is making arrangements to

build suitable repair shops at Logansport, Ind., for the use of the road.

Galena & Southern Wisconsin.—This road is now completed to McCormack's, Wis., eight miles beyond the late terminus at Platteville, and 40 miles from Galena, Ill. This extension was finished last year. The company expects to build 11 miles more, to Montford, this season.

Grand Trunk.—The official announcement made in London states that (subject to audit) the accounts for the half-year ended Dec. 31, 1877, show the net revenue to amount to £256,000, and that after payment of all pre-preference charges, there will remain a balance sufficient to pay a half year's dividend of 3 per cent. per annum on the first preference stock, and the Directors propose to issue dividend warrants at that rate on March 1.

The charges against the revenue for the half-year include increased charges, as compared with the corresponding half-year of 1876, of £46,000 in respect of the maintenance of way department, and of £6,000 for renewal of engines.

Great Western, of Canada.—A cable dispatch from London says: "The Great Western Railway accounts show a balance, after providing a credit for the various reserve funds for the half-year, sufficient to write off the revenue overdraft and arrears of dividend on preference stock for the previous half year, to pay a dividend on preference stock, to pay a dividend on ordinary shares of 0½ per cent., and to carry forward \$10,000."

This is a better showing than the road has been able to make for several years.

Gulf, Colorado & Santa Fe.—The board of directors has decided to contract with J. H. Brooks, of Iowa, for the extension of the road, on terms proposed by him.

The board has also resolved to run a train twice a week over the 45 miles of road completed from Galveston, Tex., westward, and to put up several depots at convenient points.

Illinois Central.—This company's statement for February is as follows:

During the month of February 1,065.53 acres of land were sold for \$5,737.11. The cash collected on land contracts was \$17,438.93.

The traffic on the main line in Illinois (707 miles) was \$364,413.00, against \$358,866.43 in February, 1877. There was also an increase on the Iowa Division of \$24,114.03, making the gain on the entire line for the month \$29,060.60. In addition to the above, the Springfield Division earned in February (as estimated) \$11,243.

It is reported that this company intends to give up the use of the Chicago & Iowa road, over which the business of its Iowa lines has passed to reach Chicago since 1872, and is negotiating with the Chicago & Northwestern for the use of its line from Freeport to Chicago for that business. This part of the Illinois Central, from Freeport to Dubuque, originally formed an extension of the Chicago-Freeport line of the Northwestern, and passenger trains from Chicago to Dubuque ran over this route before the Chicago & Iowa was built.

Illinois Extension.—This company has filed articles of incorporation in Illinois to build a railroad from Chicago through the towns of Lake and Thornton, in Cook County, to the Indiana line, there to connect with the projected Indiana Extension Railroad. The capital stock is to be \$1,080,000. The incorporators are William Young, of Valparaiso, Ind.; Leonard Pearson, Benjamin Wiley, Lafayette L. Simmons and David L. Hough, of Chicago.

Indianapolis, Cincinnati & Lafayette.—Mr. Daniel A. Dwight, Trustee under the Cincinnati & Indiana mortgage of 1867, gives notice to the bondholders that he will, on April 3, apply to the Court to accept his resignation as trustee and to relieve him from all further responsibility, unless before that date he is supplied with sufficient funds to prosecute to its completion the foreclosure suit which he began at the request of the bondholders.

Iowa Railroad Law.—The lower House of the Iowa Legislature has, after a long debate, passed the bill repealing the railroad tariff law and providing for a board of commissioners to have the general regulation of the railroads of the State, with power to prevent extortion and discrimination. The Senate is said to have a majority in favor of the bill.

James River & Kanawha Canal.—It has been finally decided to repair the damages done by the winter freshets. A contract for the repair of the canal from Richmond to Buchanan and Lexington, has been let to Jordan, Ballard & Co., of Rockbridge County, Va.

Lafayette, Muncie & Bloomington.—Receiver Chapman's statement for January is as follows:

Balance, Jan. 1.....	\$14,331.26
Receipts for the month.....	34,972.13
Total.....	\$49,303.39
Disbursements.....	33,983.86

Balance, Feb. 1..... \$15,319.53

The receipts exceeded the disbursements by \$988.27 for the month.

Leavenworth, Lawrence & Galveston.—In the suit brought by the State of Kansas to compel this company to maintain and operate its line to Lawrence and Leavenworth, the United States District Court has overruled a demurrer put in by the company, and holds that the State has a right, under the charter and land grant act, to require the company to operate this portion of its road.

Lehigh Coal & Navigation.—An adjourned meeting of the stockholders was held in Philadelphia, March 12, at which, after some discussion, resolutions were passed approving the annual report and confirming the action of the managers on their agreement with the Central Railroad Company of New Jersey. Another resolution was passed requesting the managers hereafter to prepare and distribute to the shareholders the annual report one week before the time of the annual meeting.

Louisiana & Missouri River.—At a meeting held in St. Louis, March 6, the stockholders voted to authorize an issue of \$300,000 of bonds in fulfillment of an agreement made in settlement of a number of claims against the company by contractors who built the road. The new bonds are to be secured by mortgage, with interest guaranteed by the Chicago & Alton Company, which leases the road.

Marietta, Pittsburgh & Cleveland.—Tunnel No. 4 on this road, which has been two years under construction, has been completed. It is 1,010 feet long, part of it through a very difficult and treacherous clay bed. A temporary line with high grades has been in use since the opening of the road, but will now be abandoned.

Memphis, El Paso & Pacific.—This defunct company still survives as an occasion of litigation. The suit brought by Thomas C. Bates to recover some \$500,000 from John A. C. Grey as Receiver of the company was decided at Rochester, N. Y., March 12, when the Court ordered the suit to be finally dismissed.

Missisquoi.—At the recent town-meeting in St. Albans,

Vt., it was voted to instruct the town authorities not to pay interest on the town bonds issued to this road until the President makes a full and open statement of the condition of the company and the operations of the road.

Mobile & Ohio.—Notice is given that, under an order of the Circuit Court of the United States for the Southern District of Alabama, dated Feb. 18, 1878, the Receivers of the Mobile & Ohio Railroad will on and after March 14 and until further notice pay to the holders of the bonds issued under and secured by the mortgage known as the first mortgage, dated Nov. 1, 1853, a dividend of 4 per cent. upon the face value of such bonds, valuing for the purposes of this dividend each sterling and sterling interest bond as \$1,000; and each dollar interest bond as \$750.

By the terms of the order this dividend is provisional and payments under it will be subject to adjustment upon the final settlement of said bonds.

The above dividend will be paid at the office of the Trustees, No. 11 Pine street, New York, upon presentation of, and the amount so paid will be stamped upon, each bond at the time of payment.

Monongahela Valley.—A company by this name has been organized in West Virginia to build a railroad from the Pennsylvania line through Monongalia and Marion counties to Fairmont or Palatine. The capital stock is fixed at \$500,000, and the office of the company is at Fairmont, W. Va. The line is to be part of a projected extension of the Waynesburg & Washington road from Waynesburg, Pa., southward.

Montreal, Portland & Boston.—Trains are once more running on this road, after a suspension of several weeks. The road is in the possession of S. T. Willets, who was chosen President by the board recently elected. E. H. Goff, who was chosen President by the succeeding board, is now a fugitive from Canada, under charges of defrauding an insurance company with which he was connected.

New Haven & Northampton.—This company has purchased 1,200 tons of steel rails to be laid on the northern end of the road this season. The entire main line from New Haven to Northampton will then be laid with steel.

New Mexico & Southern Pacific.—It is stated that work will be actively pressed on this extension of the Atchison, Topeka & Santa Fe, and that contracts will be let this spring for the line from La Junta, Col., southwest to Las Vegas in New Mexico. Surveying parties are now in the field and several lines are to be run. It is said that the company has already sent a force to begin the grading through the Raton Pass, in order to occupy that line. The Territorial Legislature of New Mexico has passed a very liberal railroad law, under which this company has been organized.

Ohio Central.—A meeting of bondholders was held in Newark, O., March 6, at which a plan was submitted for the purchase of the road at the coming foreclosure sale. The plan will probably be carried out.

Ohio & Mississippi.—In Indianapolis, March 8, a final hearing was had in the United States Circuit Court, on the petition of Allan Campbell, trustee under the first and second mortgages, for possession of the road, under the terms of the deeds of trust. The Court decided that it had power to make its own selection of an agent to take charge of the property; that the present Receiver, Mr. John King, Jr., had been appointed with the consent of a majority of the parties in interest, and had given satisfaction. No claim was set forth in the petition that he was not capable, or that his policy was not for the best interest of the property, and the petition was therefore denied, and Mr. King continued as Receiver.

It will be remembered that at the last annual meeting a number of the New York stockholders withdrew and elected a second or opposition board of directors. A dispatch from Cincinnati, March 12, says that at a meeting held there a compromise between the two boards was arranged. Two of the New York men—Horace M. Day and Ossian D. Ashley—are elected directors. A committee of reconstruction is appointed to prepare a plan for the reorganization of the company and for taking the road from the hands of the Receiver. This committee consists of John W. Garrett and W. T. McClintick, of the Baltimore party, W. F. D. Manice and R. L. Cutting, of the New York party, and Sir A. T. Galt, of Montreal, as a compromise party. The compromise involves the recognition of the Baltimore board as the legal board.

Olean, Bradford & Warren.—The New York and Pennsylvania divisions of this road have been consolidated under one management; a break in a line only 23 miles long proving rather inconvenient.

The stations on this road, with the distances from Bradford, Pa., are as follows: Tarpot, 1 mile; Foster Brook, 2.20; Babcock's Mill, 3.20; Derrick City, 4.10; Gillmor, 4.70; Red Rock, 5.40; Bell's Camp, 8.10; State Line, 10.49; Knapp's Creek, N. Y., 11.77; Rock City, 13.38; Four Mile, 14.13; Two Mile, 16.62; Olean, 22.96.

The time table shows two passenger and two mixed trains each way daily between Olean and Bradford; one passenger train each way between Bradford and Red Rock, and one mixed train between Bradford and State Line, making 12 regular trains in all. The average time on the through passenger trips is 1 hour 50 minutes; mixed trains, 2 hours 20 minutes.

Pacific Railroads and the Government.—A Washington dispatch says: "The Kansas Pacific people, who have been urging a measure to compel the Union Pacific Railroad to pro-rate west of Cheyenne, have changed their tactics. They now propose to organize by law a government commission to take charge of the management of the different Pacific railroads, and especially of the Union Pacific, this commission to fix the rates for freight and passengers, and to settle all questions in regard to pro-rating between the roads. The Union Pacific people denounce this as a communistic scheme, and claim that it would have come with much better grace from the Grangers than from owners and managers of railway property."

Paulding & Cecil.—This road is offered for sale on easy terms. It is about seven miles long, from Paulding, O., to Cecil, on the Wabash road, 60 miles from Toledo. The iron is laid on five miles, and the rest is graded. The equipment on the road consists of one engine, three passenger and five freight cars. Further information can be had from George W. Potter, Superintendent, at Paulding, O.

Peoria & Springfield.—The Court has overruled the objections to the proposed lease of this road to the Pekin, Lincoln & Decatur company, and has directed an order to be filed approving the lease and authorizing the Receiver to execute it. The Court stated that \$3,000 per month was a very fair rental for the 9½ miles of road, and that the lease would not prevent the completion of the foreclosure suit. The petition for the removal of Receiver Hilliard has been referred to a master to take testimony.

Pennsylvania.—The annual meeting was held in Philadelphia, March 12, a very large number of stockholders being present. The meeting was an unusually lively one,

much interest being taken in the proceedings. A good deal of talk was indulged in at the outset on the proposition to consider the printed report, which was in the hands of every one present, in pamphlet form, as read, but the reading went on by the vote of the majority. During the reading Col. Scott was peppered with questions as to "the reason why" in several notable instances. As to his own salary, Col. Scott said that he got \$24,000 and was President of all the corporations outside of the main line and controlled by it, from none of which he received anything. Regarding the recent purchase of the Empire Transportation Line, Mr. Galvin wanted to know why the Pennsylvania Railroad Company should allow its most profitable business to go out of its hands and to accrue to the profit of a fast line, and why it should now seek to burthen the company by the purchase of the Empire Transportation Line when business is at its lowest point. He said the inference is strong that it was bought because it was no longer profitable. Colonel Scott replied: "Twenty years ago, when transportation in this country was in its infancy, it was deemed to be wise to organize what were known as transportation lines. They were inaugurated first on the New York lines, and then upon yours in competition. They went on year by year, attracting a great deal of business to our line that it never enjoyed before the fast line was established. We never, when this road was limited to the traffic of this State and controlling no outside lines, could have drawn the business this fast line did; and when we began to secure a controlling interest in contributing roads we paved the way to secure the business of the Empire Transportation Company. The reason why the line was bought just when it was can be explained. A great difficulty had arisen in the oil refineries of the company by which we lost for several months a very large and very valuable traffic. If we had attempted to purchase the line two years ago we should have been obliged to raise a large amount of capital and pay it out immediately, but now we have arranged the purchase on a business of eight or nine years and arranged it under circumstances most advantageous to our company. This line was bought at a valuation made by our own company's experts and other experts and I consider the purchase a wise operation."

Mr. Sutton made quite an elaborate speech, in which he questioned the propriety of allowing the Adams Express Company to attach itself as a sucker to the Pennsylvania Railroad Company, to which Colonel Scott replied that it would not be good policy to make any change in the present arrangement with the through express business and stated that the Baltimore & Ohio Company, which had rid itself of the Adams Express Company, would be glad to get back to the old system. Upon this last Mr. Sutton took issue with President Scott, and said that a director of that road had told him they were well satisfied with the absence of Adams. The main speech of the day in what may be called opposition to the present management of the road was from Hon. Lemuel Todd, of Carlisle. While he did not question the integrity of the direction, he thought that there should be a radical change in the policy of the management—in fact, that new blood should be infused into it.

Several other stockholders spoke for and in opposition to the funding plan. Finally a resolution was adopted that the annual report be referred to a committee of seven stockholders to be appointed, with instructions to make inquiry in regard to the several items in the report, and more especially touching the proposition to create a trust for the purchase of certain securities and report the results of their inquiries to an adjourned meeting of stockholders to be held on Tuesday, the 26th, at 10 o'clock a.m.

The Chair (Mayor Stokley, of Philadelphia) announced that he would appoint the committee on another day. On motion of Mr. McCook, of New York, a resolution was adopted that the Chair appoint a committee of seven stockholders, who shall confer with the president for the nomination of directors to be voted for at the coming election.

The Committee on report, as appointed after the adjournment of the meeting, consists of Messrs. Daniel Steinmetz, Thomas Potter, Gustavus Remak, D. B. Cummins, George S. Fox, John A. Wright and Lewis Wagner. The Committee to nominate directors consists of Messrs. Morton McMichael, John Price, Israel Peterson, A. L. Snowden, C. H. T. Collis, Richard Smith and James Magee. Both committees are said to have a majority in favor of the present management.

Pennsylvania.—Early on the morning of March 9 the high wooden bridge over the Raritan River at New Brunswick, N. J., was found to be on fire, and the flames spread so rapidly that, in spite of the efforts of the railroad men and others who came to their assistance, it was entirely destroyed in about an hour. The fire was first discovered by the bridge watchman, and was at one time reported to have been started purposely, but there appears to be no reason to believe that such was the case, and it is altogether probable that a chance spark was the cause.

The bridge was built by the New Jersey Railroad Company in 1837, and was considered a very fine specimen of a wooden truss bridge. It had two floors or decks, the railroad tracks being on the upper deck, while the lower floor was originally arranged for the passage of vehicles, but this floor was closed and had not been used for highway travel for many years. Some time ago the company resolved to replace it with an iron bridge and the contract was let to the Keystone Bridge Co., which had already put up one span at the south end and the draw-span over the Delaware & Raritan Canal. Work was actively progressing on the rest of the bridge, and it was probably the removal of the metal roof which formerly covered the bridge which allowed sparks to find a lodgment among the dry old timbers and start the fire.

As soon as the loss was known the officers of the company made arrangements for the prompt conduct of the business of the road. Through passenger and freight trains are run for the present by the New York & Philadelphia New Line, leaving the Pennsylvania road for the New Jersey Central at Elizabeth, and returning to it at the North Pennsylvania crossing in Philadelphia. The local passenger traffic is transferred by stages at New Brunswick, causing only about a half hour's delay there. All the available force of bridge carpenters was at once assembled and put at work on a temporary trestle bridge, and it was expected that trains would be able to cross this structure by March 14.

The loss to the company will be considerable. The value of the burned bridge was not very great, especially as it was so soon to be replaced, but the cost of the temporary bridge will be considerable, besides the indirect loss from delay and interruption of traffic and the use of other roads made necessary. The possible damage from the burning of the bridge had before been considered, and at the time of the strikes last summer this bridge was guarded for some time by a detachment of State troops. Doubtless this was one reason why the company decided to put up an iron bridge instead of repairing the old wooden one. The only wooden bridge of importance now remaining on the New York Division is the bridge over the Hackensack River, and that was once destroyed by fire, a little more than 20 years ago.

Reading & Lehigh.—Mr. Lewis Wain Smith, representing the holders of the majority of the \$1,500,000 bonds issued in 1872 by the Berks County Railroad Company, has

begun suit in the United States Circuit Court to foreclose the mortgage and have the property sold for the benefit of the bondholders. The road extends from Reading, Pa., to Slaton, 43 miles, and was sold at sheriff's sale in December, 1874, to parties representing the floating debt creditors, who organized the present company and afterward leased the road to the Philadelphia & Reading Company. No interest has been paid on the bonds since May 1, 1874.

Royal Land Company.—The proposed terminus of this company's railroad (formerly the Potomac, Fredericksburg & Piedmont) has been Harrisonburg, Va., but surveys are to be made for an extension from that place westward to Rawley Springs, about 11 miles. This extension will open a large tract of coal lands, where there is said to be an abundance of coal of good quality. The company's road is now in operation from Fredericksburg, Va., westward 38 miles to Orange Court House.

Southern Railway & Steamship Association.—A meeting of the members in Atlanta and vicinity was held in that city, March 9, to consider the cutting of through freights by the Atlantic Coast Line and the Atlanta & Charlotte Air Line. On behalf of the last named road it was represented that the cutting was done simply to protect itself, and that the road was willing to maintain rates if possible. No conclusion was reached and no action taken and the whole subject was referred to another meeting, which was to be held March 14.

Standard Oil Company.—This company has applied to the Pennsylvania Circuit Court to have the bill in equity of H. L. Taylor & Co., transferred to the United States Circuit Court, on the ground that the real parties in the case are citizens of different States, and some of them are out of the jurisdiction of the State courts. The case has been argued, but no decision reached as yet.

St. Louis, Iron Mountain & Southern.—The annual meeting of the stockholders was held in St. Louis, March 5, but as the injunction obtained a year ago is still in force, no election of directors was held. No business was transacted beyond the submission of the usual reports.

St. Louis & Southeastern.—In the suit brought by the Receiver against the Louisville & Nashville, the United States Circuit Court has directed an order to issue enjoining the Louisville & Nashville Company from charging higher rates on through freight brought to Nashville by the St. Louis & Southeastern for transportation to points south, than are charged for similar freight received from other shippers at the same place.

St. Paul & Pacific.—The Minnesota Senate has passed the bill extending the time for the completion of this company's lines as follows:

From Melrose to Sauk Centre, until Aug. 1, 1878.
From Sauk Centre to Alexandria, until Dec. 1, 1878.
From Crookston to St. Vincent, until Jan. 1, 1880.
From Alexandria to Fergus Falls, until Jan. 1, 1880.
From Fergus Falls to Glyndon, until Jan. 1, 1881.
In case the company or its successor fails to complete the lines as above the land grant is to be offered to any corporation which will build the lines.

Texas Western.—Negotiations for money to secure the extension of this road, which have recently been in progress, have all failed, and nothing has been done. It is stated that the land grant was forfeited to the State on Feb. 22, owing to the failure of the company to complete the road to the Brazos River, as required by the charter.

Toledo & Ann Arbor.—The track has been laid on this road from Dundee, Mich., north to the Macon River, about three miles. The bridge over the Macon was to be completed this week, and meantime the tracklayers are at work on the line from Dundee southward.

Union Pacific.—The interest in branch and connecting roads owned by this company is as follows, according to a statement made to Congress, and prepared by the Government directors:

Colorado Central:	
Stock, \$210,000 par value, cost.....	\$55,500.00
First mortgage bonds, \$606,000.....	495,300.00
Gilpin County bonds, \$84,000.....	67,200.00
Cash advances, etc.....	152,156.20
	\$767,156.20
Utah Central:	
Stock, \$530,000, cost.....	277,000.00
Utah Southern:	
Stock, \$785,000, cost.....	\$699,500.00
Bonds, \$421,000.....	421,000.00
	1,120,500.00
Utah Northern:	
Stock, \$37,800.....	\$37,800.00
First mortgage bonds.....	93,000.00
	130,800.00
Omaha & Republican Valley:	
Advances for construction, secured by holding \$212,500 stock and \$605,000 first mortgage bonds.....	340,000.00
Total.....	\$2,635,456.20

The Utah Northern securities were taken in payment of freight and balances due. On the Utah Central stock the company has received \$320,500 in dividends.

This road has been unusually free from snow through the winter, but a severe storm came late in the season, and on March 10 the road was reported badly blocked for the 160 miles from Sidney to Laramie. The heaviest snow plow on the road was stuck in a drift, and one passenger train was reported two days behind time, with all the available force of the road at work clearing out the cuts.

Wabash.—Mr. Henry Thornton, of Buffalo, has begun suit to recover \$20,000 damages for the loss of 200 shares of stock held by him in the old Toledo, Wabash & Western Company. He claims that under the agreement by which the old stockholders were given stock in the new Company on payment of an assessment of \$10 per share, only 30 days were allowed to the stockholders to come into the agreement; that this time was entirely too short to give sufficient notice, and that the whole arrangement was made in the interest of certain parties who desired to control the stock. He claims that he offered to pay his assessment as soon as he received notice, but was refused, as the 30 days had then expired.

Western Union Telegraph.—The statement for the quarter ending March 31, March earnings being estimated, is as follows:

Surplus, Jan. 1.....	\$88,199.53
Net earnings for quarter.....	712,475.03
Total.....	\$800,674.56
Interest and sinking funds.....	138,000.00
Surplus.....	\$662,674.56

Out of this surplus a dividend of 1½ per cent. is to be paid, which will require \$525,931.50, leaving a balance of \$136,743.06 to the next quarter.

Wheeling & Lake Erie.—A majority of the board of directors have filed a petition in the Court of Common Pleas of Huron County, O., asking that the company be dissolved and its affairs finally wound up.